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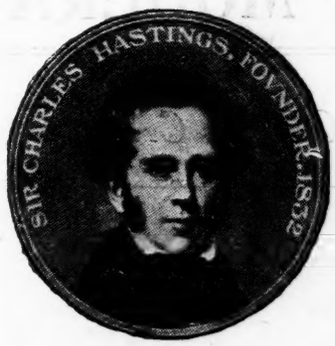

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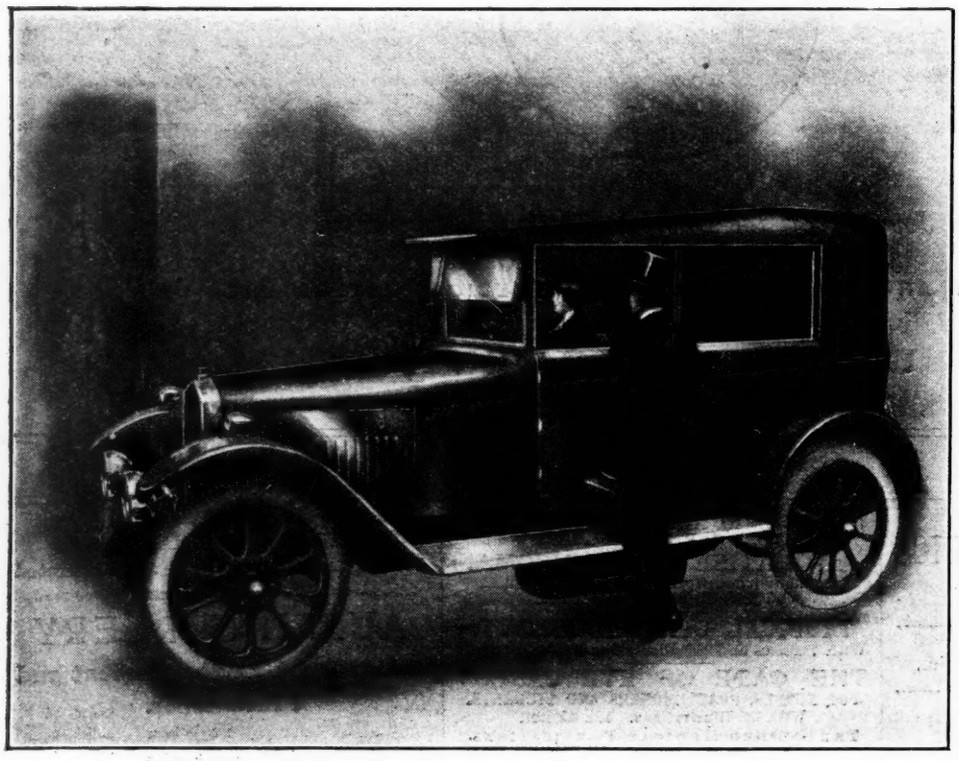

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A Post-Graduate Lecture
ON
THE HUMORAL SYNDROME OF GOUT.*

BY
PROFESSOR A. CHAUFFARD,
OF THE FACULTY OF MEDICINE OF PARIS.

IN addressing you to-day I wish, in the first place, to thank you for the honour you do me in inviting me to take part in this conference. I see in it a promise of excellent relations of friendship and scientific intercourse which will unite our two countries more and more. But you must allow me to say also that it is not without hesitation and apprehension that I have made the choice of the subject with which I propose to deal. Am I not a trifle overbold to come and speak on gout here in England, where Sydenham wrote his immortal description of the acute attack of gout—a description always copied or imitated, but never equalled; where Bright taught us to recognize the gouty kidney; where Scudamore and Gairdner wrote their classical dissertations; where Garrod inaugurated the scientific study of gout in demonstrating the pathogenic rôle of uric acid; and where so many eminent clinicians have since proclaimed the results of their investigations of this disease? My excuse is that in science nothing is final or perfected, and I shall have achieved my object if I awaken your interest in the new researches which for nearly two years I have conducted in my clinic at Saint-Antoine with my two co-workers, P. Brodin and A. Grigaut.

It is necessary in every study of gout to return to Garrod; his book has not passed out of date, and is rich in information, in clinical experience, and in personal ideas. It was Garrod who first defined the humoral state in gout and recognized and proved its essential character—excess of uric acid in the serum. I am bound to recall the delicate test of the thread, with its crystalline deposits of uric acid. In spite of the fact that this technique seems not to be exact, since we cannot say that all the uric acid of the serum becomes deposited on the thread, Garrod was able to estimate the quantity found in 65 grams of serum, which in the five cases he quotes, when expressed in terms of 1,000 grams of serum, give the figures 50 mg., 125 mg., 30 mg., 175 mg., and 110 mg. A little farther on, for the blood of patients suffering from albuminuria or gout, he gives an average quantity of uric acid varying between 44 and 173 mg. per 1,000 grams. He is careful, however, to add that in all these analyses the quantity of uric acid obtained is undoubtedly less than the real figure. The limit of sensitiveness of the method is fixed at 24 mg. per 1,000 grams of serum.

It is very curious to note how Garrod's technique gave him results near to the figures which we obtain at present with improved methods. Results of absolutely the same order are obtained in both cases.

These ingenious researches of Garrod's are classical, and all clinicians have made use of the thread test. But this obviously imperfect process did not allow fresh progress, and whilst researches on the uric acid of the urine were multiplying we relied on the initial researches of Garrod for the uric acid of the blood. A new technique was necessary, and it came to us from America with the work of Folin and Denis, and the employment of the reagent phosphotungstic acid, which gives a blue colour with solutions of uric acid. The estimation, which was gravimetric in Garrod's method, has thus become colorimetric, and the researches of Lough, Fine, and Myers have brought new and interesting deductions.

According to the American technique the normal content of the serum in uric acid is estimated at 2 to 3 centigrams per 1,000 grams, rather a low figure on account of the solubility in water of the precipitate of urate of silver and magnesium, which diminishes the real figure of the uric acid of the serum.

In the technique modified by A. Grigaut this cause of error no longer operates, and we believe ourselves to be able to say that the normal figure of uric acid per litre of the serum varies between 4 and 5 centigrams; hyperuricaemia commences above this.

Grigaut's process estimates the uric acid without including the xanthin bases, and only alloxan and alloxanthin, derived from the immediate oxidation of uric acid, are included with this substance in the figures of the estimation. Setting out in this way we were able to begin the study of gouty uricaemia, and the researches we have published[1] were carried out in the first place on thirteen gouty individuals, and we studied for each the level of the blood urea, of the uric acid, of the cholesterinaemia, and determined the urea secretion constant of Ambard, which is the most delicate means we possess for appreciating the degree of renal permeability. Our results are summarized in the following table.

TABLE I.

Diagnosis.	Blood Urea.	Ambard.	Uric Acid.	Cholesterin.
Chronic gout	0.40	0.10	0.127	2.95
Acute gout	0.40	0.80	0.115	2.15
Chronic gout	0.33	0.10	0.122	2.25
,, ,, ...	0.30	0.13	0.118	2.85
,, ,, ...	0.33	0.08	0.118	2.07
,, ,, ...	0.43	0.08	0.11	1.86
Acute gout	0.34	0.09	0.10	2.10
Chronic gout	0.33	0.13	0.10	1.65
,, ,, ...	0.45	0.10	0.10	1.50
,, ,, ...	0.45	8.12	0.09	2.15
,, ,, ...	0.40	0.11	0.087	2.70
,, ,, ...	0.40	0.11	0.078	1.80
,, ,, ...	0.72	0.11	0.072	2.00

To this first series of cases I am able to add fourteen new cases, some observed at Contrexéville by M. Schneider, with estimations performed by Grigaut, the others derived from my hospital or private practice. Here are the results:

TABLE II.

Diagnosis.	Uric Acid.	Cholesterin.
Gout and uric acid lithiasis	0.10	2.07
Chronic gout	0.095	2.25
,, ,, ...	0.085	2.13
,, ,, ...	0.075	3.60
,, ,, ...	0.069	3.25
Mild gout	0.065	1.86
,, ...	0.070	3.50
Biliary lithiasis and mild gout	0.06	2.70
Chronic gout	0.17	2.60
,, ,, ...	0.10	1.89
,, ,, ...	0.73	—
,, ,, ...	0.11	1 80
,, ,, ...	0.06	2.40
,, ,, ...	0.07	1 98

The average for all these figures gives for 27 cases 0.094 of uric acid, and for 26 cases 2.25 of cholesterin in the serum. On the other hand, in a case of juvenile hereditary gout studied during the crisis and immediately afterwards, we have found a lower series of figures—namely, 0.24 for urea, 0.023 for uric acid, and 0.82 for glycaemia. Only the cholesterinaemia was increased to 1.95, and the bilirubin of the serum was in excess. In this case Ambard's constant stood under the normal at 0.06, and perhaps the exaggerated permeability of the renal filter was the cause of the low figure for uric acid. Hyperuricaemia was not present, but the participation of the liver was evidenced by the high level of the cholesterinaemia and by the excess of biliary pigment in the serum.

Thus the hyperuricaemia, discovered by Garrod, is confirmed and made more precise by modern researches. But whence arises this excess of uric acid?—a very complex question, and one still beset with uncertainty. In the first place let us differentiate between endogenous and exogenous uric acid.

For the endogenous uric acid we must distinguish two sources. On the one hand there is a disturbance of nitrogenous metabolism—and this is the factor we know least

* One of a series of exchange lectures between the Faculty of Medicine of Paris and the University of London. Delivered at the Royal Society of Medicine, March 23rd, 1922.

about in spite of the number of researches which have been devoted to it. There seems no doubt that uric acid is derived from nucleo-proteins and purins of the tissues by a series of degradations, due probably to the action of proteolytic ferments, the uric acid, according to Lambling,[2] "representing in man the end-product of the metabolism of purins—that is to say, a waste product which the organism does not further simplify." But the endogenous origin of the purins in the gouty, and their nature and manner of variation, still remains a mystery—as, for example, in cases of early hereditary gout, where the exogenous cause plays no part.

On the other hand, there is a second cause of endogenous hyperuricaemia of which the frequency and significance are easily understood—namely, renal retention. We know by clinical experience how often the kidney is damaged in the gouty, not only as a contracted and sclerotic kidney, but almost from the commencement of the illness there may be a functional defect betrayed by the elevation of Ambard's constant, as in our cases. This is only a secondary effect in the morbid process; but it ought never to be lost sight of without clinical consideration of hyperuricaemia. The retention of uric acid may even precede the retention of urea, and we believe ourselves able to say with P. Brodin and A. Grigaut that the detection of the former constitutes the most delicate test of commencing renal hypo-permeability.

Probably side by side with renal retention we ought to give a place to tissue retention, the gouty depositing uric acid in the tissues in excess, and being able to liberate it and return it to the circulation under the influence, for example, of causes producing acute attacks. This process does not appear to me to participate except in special cases, and its importance is not comparable to the uric acid retention of renal origin.

With regard to exogenous uric acid, for a long time the results of clinical observation have borne witness, and all are aware of what a large share in the causation of gout is attributable to errors of diet, to food in excess, too protein in constitution, too rich in spices, and to alcoholic beverages, notably burgundy and champagne.

The determining factors of the hyperuricaemia of alimentary origin are probably to be attributed directly to the excess, together with the secondary modifications in the nutrition and metabolism of the tissues and hepatic activity dependent thereon.

But here arises a question which cannot be separated from this discussion—namely, the rôle of the liver in gouty hyperuricaemia. The clinicians have for a long time admitted the capital importance of the part played by the liver, and the work of Scudamore and of Garrod on gout, and of Murchison on the functional disturbances of the liver, had led to the supposition that the liver manufactured uric acid when, on account of illness, its urea-forming function failed. On the other hand, the physiologists admit that in mammals uric acid and purin bases are destroyed whilst passing through the liver by uric-acid-splitting ferments. We have turned to experiment, in order to elucidate this point, by taking samples from the portal and hepatic veins of dogs for the estimation of uric acid during digestion and under various dietetic régimes. The following table illustrates our results:

TABLE III.

No. of dogs.	Régime.	Blood.		Coefficient of retention in liver.
		Portal.	Hepatic.	
		gr.	gr.	
1	Fasting	0.0087	0.0007	0
2	"	0.011	0.011	0
3	"	0.015	0.015	0
4	Milk	0.006	0.006	0
5	Varied	0.007	0.003	0
6	Brain	0.010	0.003	20
7	Calf's sweetbread	0.0118	0.009	23
8	Varied	0.034	0.025	27
9	Calf's sweetbread	0.031	0.022	30
10	Varied	0.018	0.011	39
11	"	0.015	0.010	34
12	Liver and spleen	0.014	0.007	47
13	" "	0.013	0.006	53

Studying the details of these experiments we see that five dogs received a varied diet, two were fed on calf's sweetbread, and two with liver and spleen. The results obtained were all similar, and in eight of the nine dogs the quantity of uric acid in the hepatic blood was markedly less than that of the portal vein. Once only was the hepatic content a trifle higher than the portal—9 mg. in place of 7.

The proportion of uric acid retained varied between a minimum limit of 20 per cent. and a maximum of 53 per cent., with an average of 33 per cent.

The variability experienced in the retention coefficient must be attributed to many and special causes for each case: differences in the anatomical and functional condition of the liver in dogs of varying kinds; different stages of digestion; the nature of the food given.

The two highest figures of retention—47 and 53 per cent.—were obtained in animals fed exclusively with liver and spleen, a diet rich in uric acid. On the other hand, in three dogs maintained in the fasting state for three days, with as much water as desired, the content in uric acid was exactly the same in the portal and hepatic blood. The same result was obtained in a dog fed on milk, a diet which contains only traces of uric acid. Thus in the dog during the digestive period a greater or less proportion of the uric acid substances brought by the portal vein is retained by the hepatic cells, the liver playing the part of a regulating organ, designed to prevent the passage of excess of uric acid into the blood during the very frequent variations of the human dietary. We are ignorant of the fate of the uric acid thus retained, and we can only suspect that there occur in the hepatic cells complex chemical transformations of which we know one—the formation of urea. It is very probable that the fabrication of urea, the "protéopexie" of F. Widal, and the uricolysis are only different episodes, fragmentary evidences of the manifold action of the liver on protein material, all the stages of which we are far from knowing completely. This uricolytic function is periodic and only exercised under special circumstances, and it is very striking to observe the failure of this retention action in dogs in the fasting state, when the liver, no longer exerting any digestive control, allows itself to be traversed like an inactive gland. A milk diet which only supplies to the liver minimal traces of uric acid, and which throws least work on the digestive apparatus, acts in the same way as fasting, and fails to produce any difference in the uric acid content of afferent or efferent liver blood.

But it is a rule in general pathology that all physiological function has its counterpart in the pathological, and that the disturbed function can be deduced from the normal. Thus it appears permissible to state, in spite of the fact that direct proof cannot be given, that in the hyperuricaemia of the gouty the arresting function of the liver may prove insufficient, being incapable of retaining uric acid brought from the alimentary canal, and we might find in this the physiological explanation of the capital importance of diet in the gouty. Thus would also be explained the connexion which clinical experience has so long demonstrated between disturbances of the general nutrition, of the nitrogenous and carbohydrate metabolism, and functional disorders or lesions of the hepatic gland.

The uricolytic insufficiency of the liver thus appears to me to be one of the most important factors in the causation of exogenous hyperuricaemia of alimentary origin, and perhaps it may be passed on by inheritance—a possibility which would enable us to understand these cases of early hereditary gout, cases which cannot be explained as due to the life of the individual, and which can only depend on the transmission of an inherited defect.

Doubtless this is only an hypothesis of which one can show no direct proof in gout, but, as we have seen, it finds support in experimental physiology and in the other unmistakable signs of hepatic origin such as the hypercholesterinaemia and the hyperbilirubinaemia. Does not the same apply to other pathogenic theories in which one reasons more by deduction and analogy than by direct experiment, which is so difficult to carry out in clinical practice?

What becomes of the uric acid stored up in the tissues of the gouty, and what is its ultimate fate?

A part is eliminated in the urine according to the general law of the concentrating power of the kidney which Ambard formulated. When once the kidney is injured in structure or function then the elimination of urine is affected and may not suffice for its task. Another part, by a process of vicarious elimination, is deposited in the diseased joints as sodium urate,

in the tophi, in the urate incrustations of slow atrophic nephritis, and these local deposits once formed are not capable of being moved; they remain in ineffaceable witness of gout.

In the blood the circulating uric acid is more accessible to our therapeutic resources, and it is this which we wish to influence by diet or by our remedial agencies. It is difficult to say exactly in what chemical form the circulating uric acid occurs, but it is probable that it is in a state of colloidal solution as sodium urate, and we shall see what is the interest of the question in relation to the pathology of the acute attack of gout.

Finally, it seems that in chronic gout there is a uric acid infiltration of the tissues which is capable of modification, particularly by spa treatment. Schneider, Bricout, and Grigaut[3] thus explain the curious facts they have observed at Contrexéville. The blood uric acid of the cases of gout treated at this station instead of diminishing actually increases, as if the excess of uric acid in the tissues was mobilized, liberated, and returned to the circulation by the lavage, and then gradually eliminated by the kidneys. One or two months later there is found a remarkable reduction in the hyperuricaemia.

In order to complete the study of the serological nitrogenous metabolism of the gouty we must add that the level of the blood urea is generally slightly raised, although not often passing the physiological limits; this is illustrated by the figures in Table I. This is all that can be said at present of the origin and fate of uric acid in the gouty, and if many of the details are still hypothetical or obscure, perhaps the outlines of the main processes can be distinctly discerned. It was interesting to study the uric acid content of the blood cells at the same time as the serum. With the assistance of P. Brodin and A. Grigaut[4] we have attempted to carry out this investigation, although we recognize that many of the associated factors are but ill understood. The same holds for the blood cells as for the serum; we are still unaware in what form the uric acid exists, for the chemical combinations must be very complex and perhaps variable and of colloidal constitution. In the healthy individual and in patients suffering from various diseases the average level of cellular uric acid appears to be 20 to 25 cg. per 1,000, though not indicating any definite connexion with the figures for the uric acid of the serum. The inconstancy and variability of the figures obtained only permit us at present to assign to the cellular uric acid a value doubtful and of secondary importance. It is otherwise in the gouty, and in the five estimations which we have had the opportunity of practising in the course of chronic gout we have found the level of the uric acid markedly raised, giving an average of 36 cg. per 1,000—that is to say, almost double. The proportion is the same for the serum, with an average figure of 9 to 10 cg., as compared with the normal average of 4 to 5.

Patients with gout are thus suffering from a double hyperuricaemia, both in the cells and in the serum, and the two surcharges of uric acid seem to be associated and proportional. The cellular hyperuricaemia is probably only a particular localization of the more or less diffuse impregnation of the tissues in the gouty.

This question of the supposed presence of uric acid in the tissues helps to solve another problem—namely, that of the clinical diffusibility of uric acid. Since uric acid passes into the urine by way of the renal filter it is therefore diffusible; but little was known of the conditions under which this occurred. Our experiments, carried out with P. Brodin and A. Grigaut,[5] have shown us that in ascitic and pleural effusions, uric acid, like urea, is found in the same proportions as in the blood. On the contrary, it only passes in minute traces or minimal quantities into the cerebro-spinal fluid, in marked distinction from urea. Similarly, in experiments conducted with artificial dialysis it is found that uric acid passes much more slowly than urea. The diffusibility of the two substances is not therefore absolutely the same, neither clinically nor experimentally.

It was supposed that the hyperuricaemia was the only modification of the blood serum in gout. In reality the humoral syndrome is more complex, and, working with P. Brodin and A. Grigaut, we have added a new element, hypercholesterinaemia. It will be sufficient to refer to Tables I and II to see that this is the rule, and in fact in 26 cases in which the cholesterin has been estimated the average level of cholesterinaemia is 2.25 grams, a figure considerably higher than the physiological average of about 1.70.

Undoubtedly this hypercholesterinaemia may be due, in part at least, to suprarenal origin, when the kidney is more or less affected in its eliminating function or in its structure. But the hypercholesterinaemia may be an initial fact and precede the renal lesion, since, as is demonstrated in Table I, we have shown it to coincide with a normal or only slightly elevated Ambard's constant, and consequently with physiological kidney function. In view of numerous experiences of this kind there is no necessity to presuppose an increased production of suprarenal cholesterin, and the hypercholesterinaemia seems to be of hepatic origin. This is confirmed by the fact that the albuminous coagulum obtained by the action of trichloracetic acid on the serum often shows after some hours a blue coloration more or less well marked, a reaction which betrays excess of bilirubin in the serum.

This double evidence of hypercholesterinaemia and hyperbilirubinaemia discloses the injury inflicted on the hepatic functions in gout, and only verifies the special state of uricolytic insufficiency which we have described as the result of our comparative estimations of the uric acid in the portal and hepatic veins. And thus the capital rôle which the liver plays in the pathology of gout is confirmed.

On the other hand, in the course of our researches on hypercholesterinaemia, it seemed to us possible to evolve a law—the law of the local deposition of cholesterin when the serum cholesterin is increased in a definite and permanent fashion. In this way we have explained the pathogenesis of xanthelasma, of biliary lithiasis, and of the white plaques of the retina in patients with Bright's disease. Shall we find in the gouty a new confirmation of this law?

Note first of all that biliary lithiasis is far from rare in the course of gout—6 per cent. according to Bouchard—and this clinical affinity, which it is classical to emphasize, has only been explained up to the present by vague theories, such as Bouchard's hypothesis of retarded nutrition. On the other hand, it adapts itself very well to the theory of the origin of cholelithiasis from the hypercholesterinaemia, the theory which I have formulated. Hutchinson observed a case of xanthelasma on the eyelids in a patient suffering from chronic and hereditary gout; Dyce Duckworth reported on palpebral tophi very similar to xanthelasma in a case of gout, and in another case multiple tophi of the scrotum, the chemical and microscopical examination of which showed the presence of sodium urate and crystals of cholesterin. Loeper, in many cases of gouty hygroma, has demonstrated the presence of cholesterin. What is lacking in these early records is the chemical estimation of cholesterin and uric acid in the tissues or tophi examined, and, above all, the determination of cholesterinaemia. One cannot interpret the source and significance of the deposition of cholesterin without ascertaining the quantity of cholesterin in the serum. We have therefore searched for the presence of cholesterin in the unfortunately very rare tophi which it has been possible for us to examine. In three cases of gouty deposits in the helix we have only been able to carry out Liebermann's reaction on account of the small quantity of material we had at our disposal; it was strongly positive, almost of the same order of intensity as that obtained with the xanthomatous nodules. The murexide reaction was also positive in the case in which it could be carried out. In a case of tophus of the finger, removed for diagnostic purposes from a young man of 22 suffering from hereditary gout, and showing typical acute attacks since the age of 13, the cholesterin content of the fresh material expressed per 1,000 grams was 8.30 grams and for uric acid 2.90 grams. This case was also peculiar owing to the fact that the tophi of the finger had really undergone a fibrous change. I have published the clinical history and histology with J. Troisier.[6]

At the autopsy of a patient who died of acute uraemia following renal tuberculosis typical deposits of sodium urate were found at the level of the articular surfaces of the metacarpo-phalangeal joints, but no cholesterin was present. In a case of tophus of the heel estimation gave the enormous figures of 85.80 grams per 1,000 of uric acid and 21.30 grams of cholesterin. Cholesterin therefore appears to be a constituent element of gouty tophi, and this new fact might have been suspected from clinical examination alone. Nothing is more dissimilar in appearance than the pulp of a tophus and the gouty incrustation of a joint. The articular deposit is white as snow, whilst the pulp of a tophus is yellowish, the colour of pale fresh butter. Even viewed through the skin this butter colour of the tophus is easily seen. Chemical analysis accounts for this difference of colour, showing pure sodium urate at the level of the joints and a mixture of sodium urate and cholesterin in the tophi.

Thus in gout the liver contributes largely to the typical double adulteration of the serum, hyperuricaemia and hyper-

cholesterinaemia, and the tophus is only the external reflection of the humoral syndrome. It seems as though the tophus represents an effort of liberation on the part of the organism, a local deposit assisting in the elimination from the circulation of the excess of uric acid and cholesterin.

In all that has preceded we have described gout in the static stage when compensation is complete; but what happens when it passes to the dynamic state as evidenced by an acute crisis? At the moment we can only reason by analogy, and we are reminded of the suddenness of onset of similar acute attacks of asthma, migraine, urticaria—all paroxysmal illnesses and allied to gout by certain clinical affinities.

Since the researches of Widal, Abrami, and Iancovesco we have come to look on these morbid crises as precipitated by a disturbance of the colloidal equilibrium, very similar to anaphylactic reactions, with special modification in the number and percentage of the leucocytes, of the blood pressure, and albuminoid content of the plasma. All these crises can cause local lesions such as the oedema of the skin in urticaria and eosinophilic expectoration in asthma. I think that it is along these lines that we must search for the explanation of the acute crisis of gout. Perhaps in the first place, as suggested by the researches of M. P. Weil and Guillaumin,[7] the uric acid is in the free state in the plasma, for the greater part at least, and in the combined state in the blood cells. Guillaumin's technique seems to permit this differentiation.

In whatever ill-defined and colloidal form it exists the excess of uric acid places the gouty in a state of unstable humoral equilibrium, which may at any time be imperilled or destroyed under the influence of divers disturbing causes—errors of diet, traumatism of joints, in particular of the great toe, by fatigue or an ill-fitting boot, dampness and cold, and the seasonal changes to which the gouty are so sensitive.

Every gouty patient is sensitive to some disturbing agent or other, and there are those who cannot take a glass of champagne or burgundy without their having almost immediately an attack of pain in the toe. To the general sensitiveness must be added a local sensitiveness which causes the inflammatory process to light up always at the same point, creating thus true centres of uric acid crystallization.

If the disturbance of the humoral equilibrium is sufficiently intense the acute attack of gout flares up, and we can look on it as a true local shock, comparable to the shock of a migraine crisis. Latent sensitiveness of the gouty, provocative cause, and sudden shock in the affected area—these are the three periods of the course of gout, and we can compare the third of these to the local serological shocks which reproduce true local anaphylactic reactions, recently studied by G. Bouché and A. Hustin.[8]

In both cases there appears an active local vascular dilatation—vascular or sympathetic phase, "vasotrophic shock" of Bouché and Hustin—to which is added the painful reaction of the sensitive nerves. But in the gouty the process is complicated by a specific local reaction, the deposition, or rather the local flocculation, of sodium urate in the region of the inflamed joint. Does there exist at the commencement of the attack the haemoclastic reaction so well described by Widal and Abrami? We do not yet know, and it would be very interesting, although in practice very difficult, to investigate the point.

However that may be, if this explanation of an attack of gout be accepted we are led to consider the uric acid present in excess in the serum of the gouty as a potential exciting cause, capable under the action of the provocative agent of determining a local and elective shock with urate flocculation; a process of this kind recalls the curious experiments of A. Lumière[9] on barium sulphate, which in the molecular state of dispersion can be injected into the circulation without causing shock, whilst in the flocculated state it invariably gives rise to the symptoms of shock.

If one day the existence of this process could be demonstrated in gout we should have made a great step towards the explanation of the symptoms of an acute attack of gout. This will be the progress of to-morrow, the counterpart of the admirable work of Sydenham and of Garrod, who will always remain our guides in clinical gout, our undoubted masters in the study of this great humoral disease.

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A British Medical Association Lecture

ON

PYELOGRAPHY.*

BY

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[*With Special Plate.*]

Little time was lost after Roentgen had discovered the penetrating power of *x* rays in applying them to the detection of concretions in the urinary tract; but it was not until 1906 that it occurred to Voelcker and Lichtenberg to take advantage of the cystoscope and ureteric catheter so as to fill up the pelvis of the kidney with a fluid opaque to *x* rays and thereby obtain a photographic outline of the shape of the ureter and pelvis of the kidney. The paper published by these workers received scant notice for a considerable time, and it was not until some years later that their idea was taken up seriously by a number of workers in various countries and developed to its full possibilities. From 1910 onwards I worked at this subject extensively at the London Hospital, and in 1913 I published a full account of what I had been able to achieve on the clinical side, accompanying this with an account of experiments on sheep's kidneys, showing what happened to colloid suspensions when injected into the renal pelvis under varying degrees of pressure, and pointing out certain dangers and difficulties and how to avoid them.[1] I also produced evidence that the injection of such fluids under proper safeguards does no serious or permanent damage to the kidney.

During the last decade the method has been employed more and more until it has become recognized universally amongst urologists as an essential factor in their work. Pyelography was one of the chief subjects for discussion at the 1921 Congress of the Société Internationale d'Urologie held in Paris; at that Congress it was agreed that the method had come to stay and was one that had been developed to a high degree of safety in the hands of competent urologists. Dangers which were at first encountered by too strenuous workers have been gradually eliminated, and in the course of time improved injection fluids were discovered that cast deep shadows without irritating the kidney substance. At first various preparations of colloid silver were used, and later such substances as silver iodide, thorium nitrate, and potassium iodide, but none of these proved to be ideal. The silver preparations did not always cast a clear shadow, except in very strong suspensions, and the other substances sometimes gave rise to toxic symptoms. In 1918 Weld introduced sodium bromide, a 20 per cent. sterilized solution for the kidney and a 10 per cent. solution for the bladder. This though not an antiseptic is non-toxic and has the merit of casting a very distinct shadow. Nevertheless, it is sometimes very irritating if injected into a bladder the victim of a chronic cystitis, and in such cases I find it better to use a 10 per cent. suspension of colloid silver.

Pyelography enables us to study exactly the surgical anatomy of the kidneys, ureters, and bladder before proceeding to operation or treatment in a way which has been compared to the giving of opaque meals in the *x*-ray diagnosis of disorders of the alimentary tract. In practice it is found to yield a more accurate account as compared with the opaque meal or enema, which are frequently open to doubtful interpretations, the surgeon often failing to find what he has expected after a study of the opaque meal pictures. In dealing with the urinary tract it is seldom that we fail to find the exact condition revealed by the pyelo-radiogram or cystogram, though considerable experience is needed in interpretation of

* Delivered before a joint meeting of the Nottingham Medical Society and the Nottingham Division of the British Medical Association on March 15th, 1922.

the plates. Before the introduction of pyelography great strides had already been made with the introduction of the cystoscope and the ureteric catheter in the accurate diagnosis of the physiological and pathological state of the kidneys and bladder. Pyelography supplied a means of studying the surgical anatomy and completed the chain of evidence needed to secure a full diagnosis in any particular case. These methods taken together have made urinary surgery one of the most accurate lines of surgery at the present day. It is seldom that a urinary surgeon is obliged to cut down for exploratory purposes. If he has made a complete study of his case he should know exactly what he is cutting down for and know any variation in the anatomy that may be present in any particular case, so that he can go straight to the diseased point and correct it. Recently Carelli[2] and others have introduced a method wherein they pass a hollow needle into the perirenal fat and fill up this fat with carbon dioxide or oxygen. *X*-ray pictures taken under these conditions will often show up with extraordinary clearness, not only the outline of the kidneys but the suprarenal capsules as well. At first sight this might seem to be a very great advance, and as regards the suprarenal capsules it is undoubtedly a great advance, but as regards the kidneys I do not think the method adds very much to what we can already obtain without it. With a good modern *x*-ray outfit it is usually possible to show up a clear shadow of both kidneys if the patient has been properly prepared—not quite as dense, it is true, as by Carelli's method, but quite dense enough for practical purposes. If we wish to make a further study of the anatomy of the kidneys we can get more information by filling up the pelvis with sodium bromide through the ureteric catheter than we can by the method of Carelli. The former method shows up the anatomy of the ureter, pelvis, and calyces, and also the outline of the kidney, whereas the method of Carelli only gives the outline of the kidney. When in addition we consider that the passage of a ureteric catheter is probably less painful and less dangerous than passing a hollow needle and filling up the perirenal fat with gas, then we shall conclude that pyelography will continue to hold the field. Carelli's method will be chiefly reserved for a few exceptional cases where we suspect a tumour of the kidney, and where it is not possible to show this up by means of pyelography.

I will not detain you now with the history of the development of the method, but will content myself with stating clearly the technique which I at present employ as a result of eleven years' experience.

1. *I consider it absolutely necessary to possess an x-ray plant of my own.*

I often have need to apply this method to several patients in the course of a single day, and I soon found that it was quite impossible to arrange to take the patients round to a radiographer's house, get ready for cystoscopy, and clear up everything afterwards. The whole thing was time-consuming and wearing to a degree. I therefore resolved to put in my own *x*-ray apparatus, and I have never regretted it. I planned my *x*-ray room so that I could carry out cystoscopy without any waste of time on the same table on which I take my *x*-ray photographs. Catheterizing cystoscopes and ureteric catheters are ready at hand. In suitable cases, having taken ordinary *x*-ray plates, I proceed to catheterize the ureter, a process which does not take more than a few minutes, and I am then ready, with the patient on the table, to take as many further *x*-ray photographs as I require. I make use of a tungsten target tube, worked by a mercury interrupter and a 16-inch coil. I use an Albers-Schoenberg compressor, diaphragm, and air-pad, with the tube above and the film underneath the patient's back. The patient's legs are flexed so as to abolish the lumbar curve, and I employ on an average an exposure of two to three seconds, using up to 12 milliampères and a 6-inch spark-gap. I use a double intensifying screen and duplitized films. I endeavour to take as short an exposure as possible. The essential point in taking kidney radiograms is to use tubes which are capable of giving a picture with a very short exposure. The patient is then able to hold his breath for the second or two during which exposure lasts, and there is no movement. If there is no movement then a clear shadow is thrown; if there is movement the kidney outline becomes obscured. Needless to say, the patient must have been properly prepared beforehand to ensure that the bowel is clear.

2. *No anaesthetic should ever be used in taking pyelo-radiograms.*

If the patient is under an anaesthetic it is possible to overdistend the pelvis of the kidney and so to damage the kidney. If he is conscious and the matter has been explained to him beforehand he will know at once if there is the slightest overdistension of the pelvis, as he will feel a sudden dull pain in the back of the loin. He is, therefore, asked to state at once if he notices any such pain. If he says he feels this pain, not only is the injection at once stopped but a little of the fluid is at once sucked out through the catheter before a pyelo-radiogram is taken. I cannot too strongly warn you against the use of an anaesthetic. This factor prevents those who are not very expert in the use of the cystoscope from employing the method. You need to have long practice in passing a cystoscope and passing ureteric catheters, especially in the male, if you are to avoid causing pain. It can only bring discredit on medicine when men try to employ methods in which they are not expert, and this is how damage gets done and methods fall into disrepute. The method is essentially one only to be carried out by the professed and trained urologist.

3. *Only one kidney should be done at any one sitting.*

At one time I used to try doing both kidneys, and in America it is, I believe, a common custom to do both kidneys at one sitting; but for a long time I have taught that it is not wise to pass ureteric catheters on both ureters at one sitting except under exceptional circumstances. It is far better, if you wish to get a picture of both kidneys, to bring the patient up again a few days later and do the other ureter and kidney. If you confine yourself to doing one kidney at a time you seldom, if ever, get rigors or any constitutional upset, whereas if you do both kidneys at a time you are liable to get vomiting and fever and the patient may have to go to bed for a day or two. For a long time now I have had no trouble of any serious kind after pyelography, and the patients are able to go home straight away. I always advise them to remain indoors and rest for the remainder of the day, but they are able to return to work the next day without any drawbacks.

4. *I consider it is a mistake to employ too large a ureteric catheter.*

This is sometimes done with the idea of blocking the ureter and preventing reflux, an idea that has been adopted by many authorities. In the average case I make use of a gum-elastic ureteric catheter *with an olive end* of a size No. 5½ Charrière. No. 6 is a little too large, No. 5 is a little too small, so that I select catheters of an intermediate size, picking them out by means of a gauge. Catheters with an olive tip pass more readily than those with a conical end. The catheters are placed in silk petticoats and are sterilized in a hot formalin vapour sterilizer specially made for me by the Genito-Urinary Manufacturing Company of London. By means of this sterilizer hot formalin vapour can be blown through the lumen of the catheters as well as around their surfaces. By sterilizing my catheters in this manner with meticulous care I have been able to avoid implanting infection in the kidney. If I employ a catheter for a tuberculous case I always destroy it afterwards and never use it again. In the case of a male patient I inject 2 drachms of a 5 per cent. solution of stovaine into the urethra with a urethral syringe and hold it in place for ten minutes. I wash out the urethra with a pint of 1 in 4,000 mercury oxycyanide solution, then pass a No. 9 English scale "Marshall" gum-elastic catheter, sterilized by boiling and lubricated with "lubafax," and empty the bladder. I wash the bladder clear and fill it with 8 oz. of a 1 in 4,000 mercury oxycyanide solution. Then I pass the catheterizing cystoscope, sterilized in formalin vapour and armed with a catheter, catheterize the ureter, and leave the catheter *in situ*, removing the cystoscope. The cystoscope I am accustomed to employ is one specially made for me by the Genito-Urinary Manufacturing Company. It is nowhere larger than 24 Charrière, an exception to most catheterizing cystoscopes. It is specially rounded and smoothed off so that the lever when lowered does not project at all, and so that its passage is as easy and painless as that of the ordinary inspecting cystoscope. Very little attention has been paid to this point by most makers of cystoscopes, and this is one of the chief reasons

for difficulties experienced in passing the catheterizing cystoscope on the conscious male. The cystoscope is a single catheterizing cystoscope. I never employ a double catheterizing cystoscope, which is a clumsy and painful instrument and quite an unnecessary adjunct to the armamentarium of the urologist. I warn my younger readers to resist the blandishments of the instrument makers, and when starting to buy an outfit to refuse to purchase a double catheterizing cystoscope and remain content with a single catheterizing cystoscope. If by any chance I need to catheterize both ureters at a sitting, a practice I try to avoid, I remove the cystoscope, rearm it, and pass it afresh, and so catheterize the other ureter. Having passed a catheter up the ureter selected for examination I place its end in a sterile glass test tube and collect a specimen of urine for bacteriological and cytological examination. In some cases little if any urine comes through at all for some minutes, in others a lot of pale urine comes away at once; but whatever happens depends entirely on the reflex effect the catheter has had upon the kidney. Usually it produces no effect, but it may produce a temporary oliguria or a temporary polyuria. *It is quite a useless procedure to measure the amount of urine coming away, with the idea that this will give information as to whether the renal pelvis is a large one or a small one, and as to how much fluid to inject before taking a picture.* Failure to appreciate this fact has led to most of the accidents. If you find a lot of pale clear fluid has come away in a short time and therefore think that you can inject a similar amount, you will make many mistakes and cause your patients severe pain. *This is the bed-rock difficulty in pyelography, in that you do not really know in any particular case how much fluid the pelvis will take.* How this can be got over will appear in the sequel. The patient now lies on his back with the knees and hips bent so as to abolish the lumbar curve. The plate is placed behind the kidney area and the compressor and *x*-ray tube placed in position, the radiographer standing ready to give the exposure at the word of command. I now take my syringe and fill it with warmed sterilized 20 per cent. sodium bromide. I only fill it with 10 c.cm. to start with, and I commence with the idea that I am dealing with a pelvis of normal size—that is, one that can contain on an average 6 c.cm. I instruct the patient to tell me at once if he feels the slightest dull ache or pain in the back of the loin, as this is the best guide to overdistension. Then very slowly and with the utmost gentleness I begin to press the piston of the syringe home, watching the ease with which it goes. It usually goes quite easily up to 6 c.cm. At this point I ask the patient if there is any pain; if not and if the piston is travelling easily, I usually let in one or two cubic centimetres more and then give the word for the exposure. Immediately I suck out the fluid from the kidney by means of the syringe until I have sucked out the exact amount I have put in. This is a most important and helpful point. I then remove the syringe from the catheter and leave the catheter draining for a few minutes while the plate is being developed. When the plate has been developed I examine it, and if it shows that the kidney has been adequately filled I take no more pictures. If, on the other hand, there appears to be merely a faint and irregular shadow, this suggests that there is a hydronephrosis full of fluid which has diluted the sodium bromide solution until it no longer throws a dense shadow. When I know that, I can proceed to take a further picture. This time I fill up the pelvis first with 10 c.cm.; if no pain is felt I go up to 20 c.cm.; if no pain is felt I go up to 30 c.cm. (I seldom go beyond 30 c.cm.), and I then take another plate, and in this way get the pictures I show you to-night of congenital hydronephroses holding a large quantity of fluid. By thus taking the pictures in two stages you are able to avoid overdistending a kidney with a pelvis of normal size, and it is a technique that I have worked out for myself and can recommend to others.

At one time I made use of a burette, letting in the fluid by pressure from a height. But I find that by using a syringe with a perfectly smooth and easy-running piston I get much better results, and the advantage of the syringe is that it also enables one to withdraw the fluid at once. I use a graduated all-quartz syringe made of vitreosil.

If the kidney is already infected I usually finish by washing out the kidney with 4 c.cm. of 5 per cent. collosol silver,* but if not I do not wash the kidney out at all. Sodium bromide is not in itself an antiseptic. I am therefore accustomed to add 1 c.cm. of a 1 in 1,000 mercury oxycyanide solution to every 9 c.cm. of 20 per cent. sodium bromide solution. This makes a weak antiseptic solution and one which in practice in my hands has been found to prevent infection of the kidney. I am indebted to Professor Legueu for the idea of adding the mercury oxycyanide, which acts as an additional safeguard.

Until recently one of the chief difficulties in this work was that when one used a syringe or burette one had to pass the fluid into the ureteric catheter through a very fine nozzle, finer than the internal lumen of the ureteric catheter; but for the last two years I have used a most ingenious piece of apparatus brought to my notice by the Genito-Urinary Manufacturing Company, which originated, I believe, from Paris. It consists of a small tube of rubber about an inch long. This, instead of having a cylindrical lumen, has a lumen consisting of two inverted cones. At each end the lumen is wide, but it narrows rapidly towards the centre of the tube, where it is quite small and less than the size of a No. 5 ureteric catheter. One end of the rubber tube is fitted on to the large nozzle of the syringe, the other end fits over the ureteric catheter, which is pushed up until it is firmly lodged in the narrow end of the cone. In this way fluid passes quite easily from syringe to ureteric catheter and back again. It has made just all the difference to me in ease of manipulation.

A great deal has been made of the dangers of this method of examination. Abroad and in America one or two deaths have been reported, mostly in the early days, when great force was often used, so that kidneys were overdistended, and in one or two cases the pelvis was actually ruptured. One fatal case occurred recently in America, caused by poisoning from stale thorium nitrate. It is to be remembered that when drugs are injected under too great tension into the renal pelvis they may be absorbed into the lymphatics and even into the blood stream. It is, therefore, not wise to inject poisons into the renal pelvis, and it has lately been proved that stale thorium nitrate and potassium iodide are poisonous in large doses, but that sodium bromide and colloid silver are not poisonous. I have never employed any other materials than the two latter, and I have never seen any fatal result, and no result for which I have had to cut down on the kidney, as has been reported in the literature. Once or twice in my early days the patient has experienced considerable pain afterwards for some hours, has vomited, and has even had a little fever, accompanied by a rigor; but for the last two years, since I have used the improved technique described above, I have not seen any of these complications. Occasionally the patient suffers with a mild pain for a few minutes after the examination is finished, but this is quickly recovered from and yields readily to a dose of aspirin and rest in the recumbent position for half an hour. I do not meet even with this in one case in thirty, and it is never more than a mild and quickly passing phenomenon. If the patient does complain of slight renal pain after the injection it is an additional help in the diagnosis. He can then say the pain is exactly similar to the pain from which he has been suffering, or he can say it is quite different; in other words, an artificial renal pain has been created and enables the patient to distinguish between that and the usual pain of which he complains. Nevertheless I always ask the patient to drive home at once and go to bed for the rest of the day; or if he comes from a distance I persuade him to go into a nursing home for the night, though many reject the advice as they say they feel quite normal, and usually they are none the worse for it.

It is necessary to sound a warning. This method should not be used except by men who have trained themselves as experts in the use of the catheterizing cystoscope and in the use of this method. It needs several years of careful practice before one can carry it out without producing pain and discomfort. It is also necessary to exercise wise judgement in selecting cases for this examination. This method is not to be used routinely for all renal cases, as is commonly done abroad; it is only to be used when it is impossible to make a full diagnosis without its use, and when all other methods have been previously tried. There is no doubt it has been used too extensively by certain workers as a routine method. If you can make a full and accurate diagnosis by simple methods, do not strain at a gnat and insist upon carrying out all the full paraphernalia of possible urological research. Thereby you may swallow a camel and your patient be worse rather than better.

* Five per cent. and 10 per cent. suspensions of collosol silver are now prepared for me ready for use by the Crookes Laboratories, 22, Chenies Street, London, W.C.1.

FIG. 1.

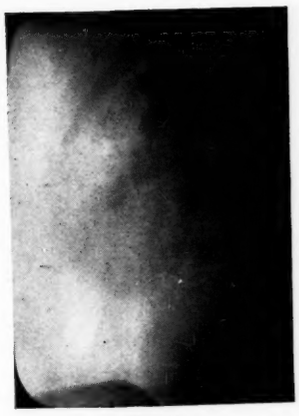

FIG. 2.

FIG. 3.

FIG. 4.

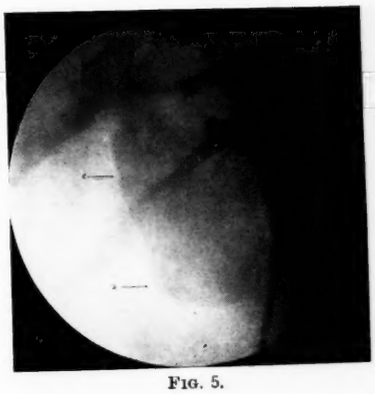

FIG. 5.

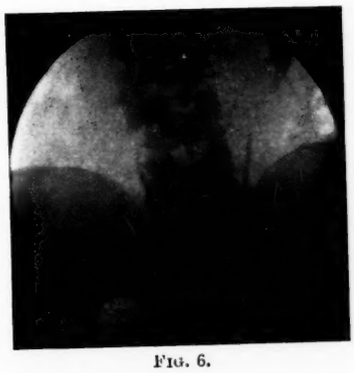

FIG. 6.

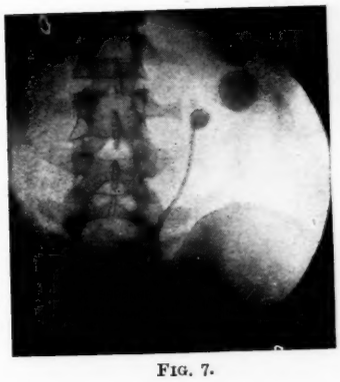

FIG. 7.

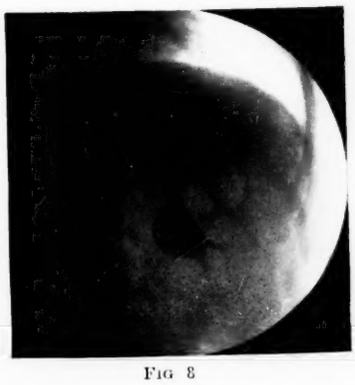

FIG. 8

FIG. 9.

FIG. 10.

FIG. 11.

FIG. 12.

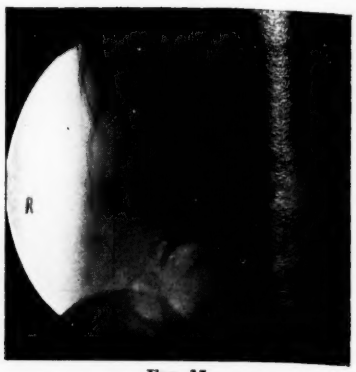

FIG. 13.

FIG. 14.

FIG. 15.

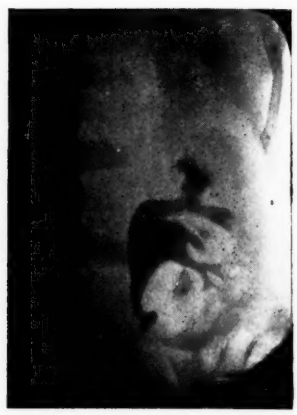

FIG. 16.

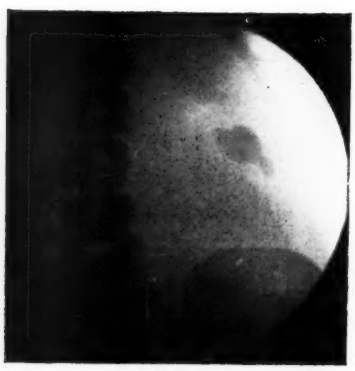

FIG. 17.

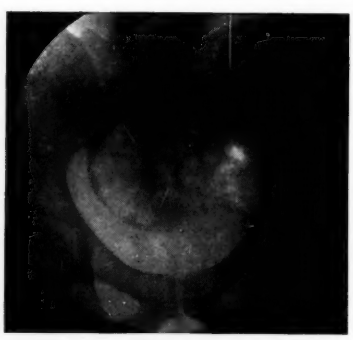

FIG. 18.

FIG. 19.

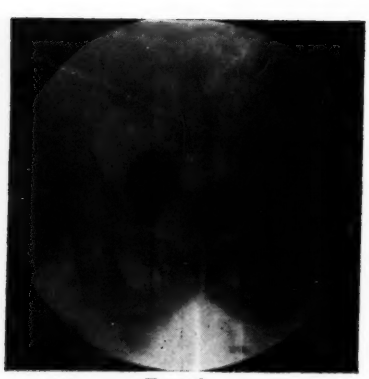

FIG. 20.

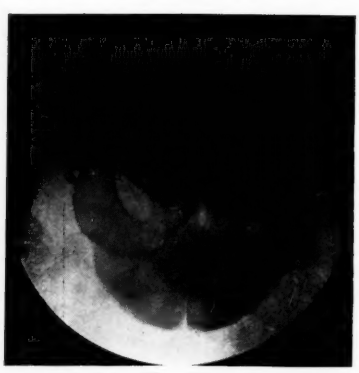

FIG. 21.

The lecturer then exhibited a series of lantern pictures illustrating a large number of pathological conditions. A selection has been made from these for publication as a Special Plate. The following notes are descriptive of the conditions shown.

Normal Kidney.

Fig. 1.—Showing the normal appearances of a normal kidney. Note the axis of the ureter running upwards to the upper portion of the pelvis, the necks of the calyces arranged in an upper, middle, and lower group (anterior and posterior), and the outline of the nipples of the pyramids opening into each calyx.

Congenital Abnormalities.

Figs. 2 and 3.—Showing a large solitary kidney on the left side, with the ureter on the right side ending blindly, or congenital absence of one kidney, by no means an uncommon phenomenon. The patient complained of aching in the left kidney, which was too heavy and had dropped considerably, and asked for its removal. Needless to say the request was refused and a belt brought relief.

Figs. 4 and 5.—Showing a case with four ureters opening into the bladder, all of which were catheterized. There is a double kidney on the left side and a double kidney on the right side with an early tumour of the lower pole. The patient complained of haematuria. The double kidney and tumour on the right side were removed.

Fig. 6.—Showing a horseshoe kidney. The upper part of the kidney is above the limits of the plate.

Fig. 7.—Showing an early hydronephrosis associated with a large aberrant renal artery pressing forwards on to an S-shaped kink of the ureter. The patient complained of renal crises. The artery was divided and a plastic operation performed on the kink. The kidney was saved, with complete relief of the symptoms.

Dilatation of Renal Pelvis associated with "Dietl's Crises."

A. *Congenital Hydronephroses.*—The lecturer said: I am not dealing now with large cystic hydronephroses of the kidney, which are quite obvious on abdominal palpation, and which are usually operated on for pain, bleeding, or infection, without any need for pyelo-radiography. I am dealing now with people who are born with congenital strictures, kinks, or valves in their ureters, or with abnormal renal arteries and bands pressing on their ureters, and who later on in life develop gradually increasing degrees of hydronephrosis. These patients complain of intermittent attacks of renal pain, and though it is sometimes possible during an attack of pain to feel a certain amount of enlargement of the kidney, yet as soon as the pain has passed the kidney returns to its normal size as it empties itself of any excess of fluid. These are the cases where the pyelo-radiogram comes as help to the diagnostician. Ordinary *x*-ray examination reveals no stone; a ureteric catheter is passed, and such pictures are obtained as are shown in the series of pyelo radiograms. In these cases dilatation always falls primarily on the renal pelvis, and to a far greater extent in the early stages than on the substance of the kidney. The kidney substance is also thinned out, it is true, but the kidney lies like a cap on top of the dilated cystic pelvis—exactly the reverse to what usually happens when the pelvis is blocked by a small stone; then the pelvis shrinks on to the stone, and the kidney substance itself becomes a large distended cyst.

Fig. 8.—This shows the earliest degree of ballooning of the pelvis. The necks of the calyces are not yet distended at all. The patient complained of left renal crises.

Fig. 9.—This shows a higher degree of ballooning, and now a distinct dilatation or clubbing of the neck of the upper calyx can be seen. This illustrated another rule which I have observed—namely, that in hydronephrosis the stress always falls on the upper and lower calyces long before it falls upon and dilates the middle group of calyces. Attacks of pain. Kidney removed.

Fig. 10.—This shows a further stage in the development of hydronephrosis. The ureter is strictured at its junction with the pelvis and is inserted in a valve-like manner high up on the wall of the pelvis. There is advanced dilatation or clubbing of all the calyces. Attacks of pain. Kidney removed.

In none of these cases could the kidney be felt to be enlarged.

Fig. 11.—Showing the final stage of hydronephrosis. This was a large cystic kidney that could be felt on abdominal palpation. It took 40 c.cm. of fluid and even then was not nearly fully filled. It shows the extreme dilatation of the necks of the calyces. Attacks of pain. Kidney removed.

B. *Movable Kidney.*—Another form of dilatation of the pelvis of the kidney is seen in cases of movable kidney. A true hydronephrosis of the congenital type is never produced by mere excessive mobility of the kidney. Movable kidney can only produce a certain amount of ballooning and hollowing of the renal pelvis and calyces associated with intermittent kinking of the ureter. The process can be followed in a series of pyelo-radiograms here shown.

Fig. 12.—The earliest degree is a kidney too low and too movable, with slight bending rather than a kink of the ureter, and with only the slightest ballooning. Fig. 13 shows an increase in the ballooning; and finally Figs. 14 and 15 exhibit a corkscrew-like kinking of the ureter.

Personally I always endeavour to avoid operating on movable kidneys. Those that are due to slack abdominal muscles can usually be relieved by abdominal exercises and strapping or a belt. Those that are due to a congenital narrow chest are often simply tender spots, the reflexes of an overwrought nervous system. If the nervous system can be rested and treated the kidney ceases to be tender. Nevertheless in this class of case patients are met with who get occasional attacks of most violent colic associated with anuria and followed by polyuria, "Dietl's crises." In between the crises they are often quite free from pain and do not complain of an aching kidney. It is in these we get pictures such as I show (Figs. 14 and 15) with marked kinking of the ureter and dropping of the kidney. I am willing to operate on such cases, as anchoring the kidney in its proper position does relieve them of these attacks of colic. Nevertheless the operation is a difficult one to perform satisfactorily. Far too often the surgeon cuts down and fixes the kidney either too low or else too high, and the condition is not relieved. In Fig. 16 I show an example of a kidney which has been fixed in too low a position by a surgeon. The colics were not relieved, and were so severe that I had finally to remove the kidney.

C. Sometimes inflammatory strictures of the ureter arise either from long-continued infection of the kidney or from the previous passage of a stone. In these cases there is usually an associated fibrotic thickening of the pelvis of the kidney, or you get a shrunken pelvis with an irregular outline (examples of which were shown).

Renal Tumours and Painless Haematuria.

In a certain number of cases where we can detect bleeding coming from one kidney, we are still in doubt as to whether we are dealing with a renal tumour, because we may not be able to feel a very large kidney on that side. In such doubtful cases pyelography is often of great service, as it may show the tumour projecting into the pelvis and altering the shape of the pelvis. Fig. 17 is an example of this. Here a tumour is growing from the lower pole of the kidney and has obliterated all but the upper portion of the renal pelvis.

From Other Abdominal Tumours.

Cases are often brought to me with a diagnosis of renal tumour and very often one is in doubt as to whether one is dealing with a renal tumour or a tumour of the liver, gall bladder, or other abdominal organ. Pyelography soon settles the question. If it shows up a normal kidney the tumour must be something other than a renal tumour.

Renal Pain.

Other cases are sent up to me with a diagnosis of renal pain or renal colic. *X*-ray examination fails to reveal a stone and the urine is free from pathological elements. In these cases I am accustomed to obtain a pyelo-radiogram. In many cases I can say definitely that the kidney is normal in size and position and cannot be the cause of pain, and such information is of considerable value. In other cases I find some cause for the pain in the kidney, such as a too movable kidney with a kinked ureter.

Stones.

A certain number of stones are of such composition that they fail to show up well on ordinary *x*-ray examination. In these cases it is sometimes possible to show up a stone by injecting colloid silver or sodium bromide into the renal pelvis and taking two plates, one at the time, the other five or ten minutes later. Very often one can see the alteration in a calyx or pelvis caused by the stone, and some of the colloid silver may adhere to the stone and show up in the picture taken five or ten minutes later.

Infections of the Kidney.

In some cases of obstinate chronic pyelitis due to the colon bacillus I find this method of value. In some of these cases the ureter has become narrowed by the disease, in others there is a chronic abscess present in the kidney. If one of

these cases fails to react quickly to renal lavage then I am accustomed to take a pyelo-radiogram to see if I can detect narrowing of the ureter, fibrosis of the renal pelvis, or even an abscess in a portion of the kidney.

Ureterograms.

In most cases it is possible to show up the anatomy of the ureter by this method and exclude phleboliths, glands, etc. In a certain number of cases of ureteric calculus the calculus does not appear on the *x*-ray plate, especially if the stone is lying in front of bone. A catheter is passed and is found to stop four to six inches up the ureter. A film is then placed beneath the pelvic portion of the ureter, sodium bromide injected, and an *x*-ray picture taken. This may then show up a stone impacted in the ureter, the ureter dilated below the stone, the catheter running up to the stone, and very often some of the bromide will run past the stone and show up the dilated ureter above the stone and a stricture at the site of the stone. Fig. 18 illustrates this particularly well.

Fig. 19 provides another interesting example. The patient came to me suffering from pyelitis of pregnancy which persisted after the child was born. I catheterized the right ureter and filled it up with colloid silver. It shows very well the dilated condition of the whole ureter. As I have pointed out before,[3] the ureter in pregnant women undergoes dilatation due to loss of tone in the muscle of the ureter rather than to pressure of the uterus. This tone returns very slowly after pregnancy. This is the first time I have been able to demonstrate this fact by the ureterogram in the living subject.

Cystograms.

From time to time it is of value to take *x*-ray pictures of the bladder when filled with opaque solutions. I find that sodium bromide, even in strengths of 10 or 15 per cent., is apt to be very irritating to the bladder and cause great pain, especially if the bladder is inflamed. I therefore prefer to employ 10 per cent. colloid silver. This does not cause any pain in the bladder, and shows up quite well enough for practical purposes. Pictures should be taken in the antero-posterior and also in the lateral positions. The method is useful chiefly for showing up the extent of bladder pouches. One can see the openings of the mouths of the pouches with the cystoscope, but very often one can have no idea as to how large the pouches are until one takes a cystogram (Fig. 20).

Another use for this method is to study the outline of the bladder and prostatic cavity after prostatectomy, and it is also possible to determine by this method whether the ureters are allowing fluid to run from the bladder into the kidney in cases of back pressure. The bladder is filled with colloid silver, and the patient is placed with the head down. In some cases the colloid silver is found to run back from the bladder into one or both kidneys in cases of back pressure, also in some cases of tuberculosis and other infections of the kidney with dilated ureters.

Finally, Fig. 21 shows a case of recto-vesical fistula in a man following on a fractured pelvis. I was able to cut down, excise the fistula, and cut off the rectum from emptying its contents into the bladder.

Conclusion.

Pyelography has established its position as a valuable method of clinical research in urology. It is indicated particularly in cases of severe abdominal pain of doubtful origin, to determine also the nature of abdominal tumours, and to complete the diagnosis in many cases of haematuria and pyuria.

REFERENCES.

[1] Pyelo-radiography: A Clinical Study. *Proc. Roy. Soc. Med.*, Surgical Section, 1913, vol. vii, pp. 16-40. [2] Carelli: Royal Society of Medicine, December 8th, 1921. [3] *Common Infections of the Kidney*, p. 97.

THE Fifth Congress of French-speaking Paediatrists will be held in Paris on July 10th, under the presidency of Professor Weill of Lyons, when the following subjects will be discussed: (1) The place of pituitary and pineal glands in infantile dystrophy, introduced by Dr. P. Lereboullet. (2) Infantile diabetes mellitus, introduced by Dr. Rohmer of Strasbourg. (3) Congenital scoliosis, introduced by Drs. Mouchet and C. Roederer. (4) The rearing of children outside the family, introduced by Drs. H. Méry and Ribadeau-Dumas. (5) Infantile hygiene in Switzerland from the social standpoint, introduced by Dr. A. D'Espine and Dr. Reh of Geneva. Further information can be obtained from the general secretary, Dr. Péhu, 24, Place Bellecour, Lyons.

The Milroy Lectures

ON THE

INFLUENCE OF INDUSTRIAL EMPLOYMENT UPON GENERAL HEALTH.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON ON MARCH 9TH, 14TH, AND 16TH, 1922,

BY

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LECTURE III.

So far we have investigated the hygienic importance of industry by the topographical and historical methods; the result has been to show that some conditions of industrial life are correlated with factors of excessive mortality; we have failed to establish a causal nexus—to pass from correlation to causation. We have now to consider whether other methods of study lead to more precise conclusions. We might, in the first place, retain the topographical method and adopt another unit—for instance, the physique of the inhabitants of different towns. But unfortunately such data as exist are quite inadequate, so I pass to another line of inquiry—namely, occupational comparisons, the unit of comparison being a rate of mortality.

Occupational Mortality in General.

In this region Dr. Farr was, as in so many other regions, the pioneer, and decennial evaluations of occupational mortality in England and Wales go back fifty years; in any compilation of industrial rates of mortality the English statistics are predominant, and they have done duty in arguments and influenced legislation in all parts of the world. It was therefore to be expected that their value would be frequently criticized. The criticisms to which such statistics are exposed fall into two classes: (1) It is doubted whether the rate of mortality shown in a particular occupation does in fact represent the "real" mortality of that occupation; (2) it is doubted whether, even if the former question is answered affirmatively, an excess of mortality in a particular occupation is really cogent evidence that such occupation is unhealthy.

The weaknesses which authorize the criticisms under (1) are: (*a*) That the basis of classification has not only been changed from census to census, but is still (I am speaking of the census of 1911) "only truly occupational in parts, being as regards manufacture for the most part frankly industrial. Thus the driver of a motor car is classified as a chauffeur—his occupation; but the workman engaged upon its manufacture is classed either as a motor-car chassis maker or as a motor-car body maker—headings which indicate merely the industry in connexion with which he plies his trade, whether it be that of tinsmith, moulder, fitter, sandblastman, painter, or what not" (General Report of Census of England and Wales, 1911, Cmd. 8491 of 1917, p. 12). (*b*) That there is no guarantee that the occupational description in virtue of which an individual contributes to the total years of life lived, to the denominator of the fraction measuring the rate of mortality, will be the same as that upon the death certificate which admits him to the numerator.

The occupational complexity of our own profession is not greater than that of most industries, but it sufficiently illustrates the point. The *industrial* description of all persons admitted to the *Medical Register* since 1886 would be, I suppose, physician, or surgeon, or accoucheur, any one of the terms implying both the others. Consider the troubles that would await a statistician who wished to determine whether the rate of mortality of physicians in the *occupational* sense differed from that of physicians in the *industrial* sense. It is quite as much for these reasons as for the desire to base rates upon large numbers that the statistical grouping of occupations is a coarse one.

There is a further point: although the method of inquiry which we are discussing formally renounces geographical or topographical differences, for some of the largest industries of the country the renunciation *is* purely formal. In 1911 83.2 per cent. of the total number of persons engaged in cotton manufacture were enumerated in Lancashire and nearly all the remainder in the adjoining counties of the West Riding of Yorkshire and Cheshire; 88.7 per cent. of those engaged in wool and worsted manufacture were enumerated in the West Riding of Yorkshire. When we compare the rates of mortality of cotton manufacturers with those of, say, printers,

we are comparing the conditions of persons concentrated in one part of the country with those of workers distributed all over it.

One sees, then, that the returns must be used with great care, even when we wish to answer the simple question whether such or such an occupation experiences a high rate of mortality. When we go on to ask the further question, Is the occupation itself responsible for that high rate of mortality? the difficulties are very much greater, because of occupational selection and the movement from one occupation to another, which may be due to a deterioration in health.

To seek fine shades of meaning in the statistics of the many scheduled occupations, to subject them to the meticulous analysis which modern statistical artists have devised, is often to waste time. But there is something of value in the data, and even the severest critics have not spared themselves in the search for gold amongst large quantities of quartz. I shall restrict myself to a very few broad comparisons.

Special Occupations.

I shall speak of twelve industrial groups, including the clergy, commercial clerks, agricultural labourers, printers, cotton manufacturers, wool and worsted manufacturers, tailors, and shoemakers. The selection has not been made at random. In the first place the numbers of lives exposed to risk—that is, thrice the enumerated census populations—are large, more than 100,000 in each instance. In the second place the groups illustrate different phases of industrial life. The clergy, whose mortality I take as a standard, typify a sober, clean-living, educated, but not wealthy, group under highly diversified environmental conditions. Commercial clerks typify the less successful lower-middle-class population of cities; agricultural labourers are, in the main, very poor persons living in the country, whose sons and brothers swell the ranks of the industrial townsmen; cotton and woollen manufacturers are examples of skilled workers localized in a particular area; printers are skilled artisans not concentrated in any one part of the country; tailors are heterogeneous;

TABLE I.—*Occupational Mortality Rates (1910–12) expressed in Terms of Mortality among Clergy. Ages 25–35.*

Group.	All Causes.	Phthisis.	Pneumonia.
Clergy	100	100	100
Agricultural labourers	147	151	181
Cotton manufacturers	177	199	303
All textile workers	195	235	320
Tailors	205	341	227
Wool and worsted workers ...	209	262	322
Textile dyers and bleachers ...	218	244	324
Printers	218	402	200
Hand compositors	221	480	100
Commercial clerks	235	387	222
Shoemakers	247	449	251
Shoemakers in Northants and Leicestershire	249	539	138

TABLE II.—*Occupational Mortality Rates (1910–12). Ages 35–45.*

Group.	All Causes.	Phthisis.	Pneumonia.
Clergy	100	100	100
Agricultural labourers	156	165	191
Cotton manufacturers	208	236	247
All textiles	219	259	216
Wool and worsted makers ...	225	248	232
Textile dyers and bleachers ...	242	276	332
Tailors	250	428	219
Shoemakers in Northants and Leicestershire	250	566	184
Printers	251	464	239
Hand compositors	279	522	284
Shoemakers	270	486	233
Commercial clerks	281	447	239

TABLE III.—*Occupational Mortality Rates (1910–12). Ages 45–55.*

Group.	All Causes.	Phthisis.	Pneumonia.
Clergy	100	100	100
Agricultural labourers	107	167	114
Shoemakers in Northants and Leicestershire	163	508	121
Wool and worsted makers ...	188	295	125
Printers	192	571	175
All textiles	194	347	187
Shoemakers	196	594	153
Hand compositors	197	595	139
Cotton manufacturers	199	349	222
Tailors	202	485	192
Textile dyers and bleachers ...	212	334	206
Commercial clerks	216	453	171

TABLE IV.—*Occupational Mortality Rates (1910–12). Ages 55–65.*

Group.	All Causes.	Phthisis.	Pneumonia.	Bronchitis.
Agricultural labourers ...	79	148	116	194
Clergy	100	100	100	100
Shoemakers in Northants and Leicestershire	120	381	154	338
Printers	130	496	137	413
Hand compositors	132	593	124	387
Shoemakers	136	484	158	500
Tailors	141	493	160	515
Commercial clerks	146	463	201	349
Wool and worsted makers	156	348	193	513
All textiles	159	396	206	873
Textile dyers and bleachers	160	468	208	598
Cotton manufacturers ...	169	416	250	809

while shoemakers can be divided, very roughly, by a geographical test into factory and non-factory operatives. In the tables are shown the rates of mortality in four decennial age groups from all causes, from phthisis, from pneumonia, and from bronchitis—all expressed as percentages of the rates upon clergymen. I have also inserted in these tables the combined results for the textile industries, for textile dyers and bleachers, also the rates peculiar to one class of printers, hand compositors, and those appertaining to boot and shoe or slipper makers enumerated in the counties of Northants and Leicester, the most important concentration of factory boot manufacture in England and Wales.

Let us begin with a general survey of mortality in age groups. At 25 to 35 agricultural labourers experience a mortality of some 50 per cent. excess over clergy; the skilled industrials of the north-west show a greater excess, but shoemakers—whether the factory operatives of the Midlands or shoemakers as a whole—are the worst off, having two and a half times the death rate of the clergy. The principal assigned cause is phthisis, which amongst the operatives of Northampton and Leicestershire is five times as fatal as amongst clergy and twice as fatal as amongst textile workers. Is this attributable to (*a*) climatological differences, (*b*) differences of recruitment, or (*c*) differences of factory environment? Answers to these questions cannot be much better than guesses. But if—and the speculation is plausible—the nearest area of recruitment is that most usually drawn upon to feed an industrial centre, one might suppose that the supply of unsalted youth, of genuine rustics, to be found within fifty miles of the great Midland boot factories is very much greater than that available for the cotton mills; but, as said before, this is only a speculation. Such little direct evidence as we have respecting immigration into the boot-manufacturing centres does *not* suggest any large inward movement.

In the decennium 1881–90, indeed, Northampton gained considerably by migration (864 males and 1,030 females in the age group 15 to 35), but in the following decennium both age groups show a small outward balance (Welton, 357). In a paper contributed to

the *Journal of the Royal Statistical Society* in 1912 Mr. Welton summarized the changes (all ages) shown by the census of 1911 both in Leicester and Northampton. Each showed an *outward* balance—Leicester of 7,100 males and 3,680 females, Northampton of 2,476 males and 2,040 females. These results do not of course prove that there has not been a considerable inward movement from the country compensated for by emigration of the town born, but clearly they are not evidence in favour of the hypothesis suggested, and must therefore be specially emphasized.

Another way of testing the hypothesis is to examine whether the ratio of mortality rates, using the clergy as a standard, has increased over the last sixty years, since the transformation of the shoe manufacture from a home to a factory industry has been largely effected in that period, especially during the last twenty years. As a matter of fact, the relative mortality at the earlier ages *has* increased.

Thus, combining Dr. Farr's 1860 and 1870 enumerations, one has for the age group 25 to 35 per mille rates of mortality of 4.7 (clergy) and 9.52 (shoemakers), giving a percentage ratio of 203 for the shoemakers; in the enumeration of 1890-92 the rates are 4.2 and 7.66—ratio 182; in 1900-2, 2.7 and 6.33—ratio 234; while, as we have seen, for 1910-12 the ratio is 249 for the Leicester and Northants shoemakers and 247 for all shoemakers. The ratios in the next age group are 180, 218, 240, and 250; at 45 to 55, 126, 189, 179, 163; at 55 to 65, 135, 139, 128, 120. These figures are consistent with the view that the change from home to factory industry—despite the notorious objections to the former—has not been *relatively* favourable at earlier ages, and are therefore consistent with the hypothesis. But they do not constitute a strong argument.

The rate of mortality of commercial clerks should be a source of painful reflection; in this age group it is exceeded by shoemakers alone; at 35 to 45 it is the highest of any in our table, and holds the same place in the decennium 45 to 55. No doubt this group bears much the same relation to middle-class industries as the group general labourer does to the hand-working classes—it includes, that is to say, a sensible proportion of weaklings in the lower and of failures in the later age groups. But if we admit any other factors of mortality than those assignable to selection we shall not doubt that the hygiene of what used to be called the black-coated labourer needs as much attention as that of the industrial worker. Next to clerks come printers, whose mortality from phthisis is far beyond that of any group save the shoemakers; their mortality from bronchitis and pneumonia is above the average, but less than that of the textile workers, who experienced a much smaller mortality from phthisis. The two great textile groups show some difference one from another: the cotton manufacturers have the lower general mortality, and the lower mortality from each special cause named.

In the age of industrial maturity, 35 to 45, the position relatively and absolutely has changed; all our employed groups except agricultural labourers and the Midland bootmakers stand worse in terms of the mortality of the clergy than they did. The shoemakers still have the highest mortality from phthisis, but their relative mortality is no worse than before; both the textile groups have deteriorated, and the tailors have deteriorated a great deal. If the bad showing of the Midland shoemakers in the earlier ages as compared with the cotton and woollen operatives was due to the larger proportion of unsalted rustics, then a selective mortality has just enabled them to keep station while the textile workers are beginning to falter. Agricultural labourers, despite the winnowing out of the ambitious fit who have passed into the towns, show no appreciable deterioration.

In the next age group all our industrials have improved relatively to the standard, but this fact must not be made the subject of too comfortable reflections. There are weaknesses in every method of statistical comparison, and the weakness of the particular one here used is that arithmetical necessity imposes upon the percentage ratios some degree of convergence.

It were too ambitious to speak of a "law" of mortality as a function of age, but if we suppose that the force of mortality is compounded of an element independent of age and an element increasing in geometrical proportion with age—the hypothesis of Gompertz, or, as it is usually termed, the Makeham-Gompertz hypothesis—it is plain that with advancing age two formulae of mortality having different constants will converge nearer and nearer one to the other. So that if we find the ratios in my tables growing larger we may certainly infer a deterioration, but if they grow smaller we cannot infer an improvement without special examination (which the data do not justify).

The *order* of the groups is now quite different: the Midland bootmakers, although still afflicted with a high rate of phthisis, have the next lowest mortality from all causes to the agricultural labourers; tailors are almost as bad as commercial clerks, but very little worse than cotton manufacturers, who stand higher than printers and appreciably higher than woollen goods makers. In this age group the cotton workers begin to be seriously troubled by pneumonia and bronchitis, responsible for 8.7 and 5.8 per cent. respectively of all deaths, and at rates 77 and 60 per cent. in excess of those upon woollen and worsted workers. You will remember that the mortality from these respiratory diseases is above the average both in Westmorland and Cumberland, so that *part* of this excess may be climatological, not industrial.

In the age period 55 to 65, the textile workers have reached the worst place, while the Midland bootmakers stand best amongst the industrially employed; bronchitis, responsible for 10.7 per cent. of all deaths in the industry, is much more than twice as fatal to the cotton makers as to the shoemakers, and more fatal—in the proportion of 8 to 5—than to woollen and worsted makers. Printers, although still liable to an excessive mortality from phthisis, stand better than the textile operatives.

Let us concentrate our attention still more closely upon these particular groups of contrasting workers—the cotton manufacturers of Lancashire, the woollen workers of the West Riding, the shoemakers of Northants and Leicester, and the printers of all England. In which of these groups of skilled artisans is the largest number of maximally productive years available? Using the life table method, we find that the average number of years lived from 25 to 55 is 27.58 for cotton manufacturers; 27.39 for woollen manufacturers; 27.23 for printers; 27.17 for the boot and shoe makers in Leicestershire and Northamptonshire. No practical importance attaches to the small differences between these figures; we may take it that in each occupation some 91 per cent. of the theoretically possible term of years is enjoyed. It is, however, instructive to see how quite different courses of mortality have led over this period to substantially the same final result. The textile workers with their low adolescent mortality counterbalance, in this comparison, the increasingly unfavourable effects of later adult mortality. Had we carried the calculation over another decade we should have found an advantage amongst the shoemakers, who were left at 55 with substantially the same number of survivors of entrants at 25 as the cotton manufacturers—namely, 7,719 cotton makers and 7,716 bootmakers out of an initial 10,000 in each case.

These results admit of certain deductions and prompt certain speculations. The deductions are these. Although phthisis is by far the most deadly of the causes of mortality in early adult life, it does not follow that an industry of which phthisis takes a heavy toll is an unhealthy industry, if we use as our measure of healthiness the proportion of years lived in maturity. We can hardly even suppose that these are pathologically weighted years, that for instance the 27 odd years lived by printers between 25 and 55 are more smitten by ill health than those of the cotton makers; because after 55 the mortality rates of printers are not worse than, but better than, those of cotton manufacturers. Dr. Tebb and I reached the same conclusion by another path. We found that if a very much larger number of occupational groups were treated by the method of correlation deaths from phthisis as the dependent and deaths from all other causes as the independent variable, both printers and shoemakers (tailors, bookbinders, hosiery makers, and cabinet makers were in the same case) experienced a mortality from phthisis out of proportion to their mortality from other causes. Miss C. M. Thompson (see Greenwood, (1), 336) also found that in the London boroughs there was little correlation between the death rate from tuberculosis and from other diseases independent of that between tuberculosis, overcrowding, and industrial employment. Accordingly we may, I think, conclude that the problem of phthisis-ridden industries is not exclusively a problem of the recruitment of weaklings. Of course this would be a mere truism if my survey included any of the occupations dealt with by Professor Collis in his Milroy lectures, subject to a specific risk, such as that of the Sheffield grinders, but I have entirely excluded these from my consideration. It further appears that the special liability of workers in these occupations is not inherent in the art itself. Thus the whole group of shoemakers, which must include a very large number of non-factory shoemakers, does not at ages under 45 experience so heavy a mortality from phthisis as the Northampton and Leicester group, nor did Dr. Tebb and I find the same excessive mortality from phthisis amongst Dutch shoemakers. Again, the English

cotton manufacturers have relatively little phthisis, but the same class of operatives in Massachusetts (Perry) suffer greatly from the disease.

The Validity of the Statistical Method.

A point has now been reached in our journey at which we may pause and ask ourselves whether any further progress be possible without the aid of other implements than those we have so far employed—namely, general epidemiological and elementary statistical methods. Within the last few months two eminent members of our profession have rated the statistical method low. In a new edition of his *Technique of the Teat and Capillary Glass Tube* Sir Almroth Wright expresses his conviction that in *therapeutic* research clinical experience "unaided by apparatus and technique" is "of infinitely little account," and statistical evaluation (except for propagandist purposes) but "old abusing God's patience."

The name of Sydenham warns us that either "research" or "apparatus and technique" must be understood in what theologians called a non-natural sense before we can accept Sir Almroth's condemnation of clinical experience as an instrument of therapeutic advance. By some such casuistry we might hope to bring the Heberdens, the Jenners, and the Murchisons from under the edge of Sir Almroth's sword. But our charity ought not to reach the "statistical evaluators," since, I gather, their "accepted statistical doctrine teaches that all false judgements are quashed when we collect enough cases." These persons, it seems, have but a single method of procedure—namely, "arbitrarily selecting one particular criterion and counting the exact proportion of cases in each group which satisfy and fail to satisfy it." The doctrine is justly stigmatized by Sir Almroth as false, and the method argues a strange limitation of outlook. Were Sir Almroth able to cite *any* instance of a statistician who accepted this heretical doctrine and exemplified this erroneous practice, the conclusion he invites his readers to draw would attain the quite respectable rank of a fallacy *a dicto secundum quid ad dictum simpliciter*. No such instance being afforded, Sir Almroth merely prompts a reference to Job xxxviii, 2, and provides one more case of the darkening of counsel.

Sir Arthur Newsholme, who, having a wider experience of statistical methods than Sir Almroth Wright, has no doubt a higher opinion of their value as instruments of research, still seems in agreement with Sir Almroth to the extent of assigning to the statistician a place in the propagandist rather than in the research department of the public health service.

If I have correctly followed Sir Arthur's argument developed in his address to the American Statistical Association, he would assent to the following propositions: If in a particular city, or group of cities, the rate of infant mortality began to decline after the establishment of infant welfare centres, and continued to decline *pari passu* with the extension and development of such centres, it would be proper to use the statistics as evidence that the establishment of the centres had a causal relation to the decline of infant mortality. If it were also found that in some other group of cities where no such centres had been established the rate of infant mortality declined synchronously with that of the former cities and to the same extent, this second group of statistical facts should in no way modify the conclusion attempted to be drawn, and impressed upon the general public by statistical charts, in the former case. Sir Arthur Newsholme is anxious to repudiate an intellectual heresy which popular wisdom has stigmatized in the adage that there are more ways of killing a dog than drowning him. Because, let us say, infant mortality declines without welfare centres or care committees, it does *not* follow that welfare centres and care committees are useless. But it *does* follow that infant salvation may be attained in more ways than one, and we may fairly ask whether the appraisement of these various other causes is not a proper object of scientific research, to attain which the statistical method is a valuable instrument. I believe that Sir Arthur, in his zeal for the repudiation of Sabellius, has not sufficiently guarded himself against the wiles of Arius. It is, no doubt, very wrong of non-medical statisticians to confound the persons of the etiological Trinity; but it is quite easy for the administrator whose zeal for laboratory results may not always be tempered by expert knowledge to divide the substance. "Il existe," said a great physiologist, "toute une école médicale dont les sectateurs n'ont, bien entendu, jamais hanté les laboratoires, mais pour qui le mot 'expérience' tient lieu de tout, comme le 'tarte à la crême' de la comédie" (Bert, *Pression barométrique*, p. 516). This sarcasm is not entirely unmerited by some who assure us that the rôle of the statistician is to be the publicity agent of the experimental pathologist. The experimental philosophy of the administrator is not always that of his contemporary in the bacteriological department. I suppose many medical officers of health believe that the reduction of sources of direct infection *in vivo* is the most important means of combating the spread of fatal tuberculosis. The segregation of "open" cases of phthisis has been eagerly recommended, statistics correlating such measures with the declining death rate have been widely circulated, and it has been asserted that such measures are the administrative expression of experimental truths.

But the experimental pathologists of our time are not unanimous. Professor Calmette, indeed, seems to regard exposure to an infection held within not very clearly defined bounds to be a blessing in disguise. He dissents from much which was recently orthodox in respect of paths of infection, reducing the importance of milk contamination to a very modest place, although he is quite willing to "considérer comme dangereuse, surtout pour les jeunes enfants, l'ingestion répétée des laits crus riches en bacilles" (313). Upon the basis of experimental and observational studies of the last twenty years the etiological problem of tuberculosis has been formulated by men who are certainly not "arm-chair statisticians" in terms very different from those which inspired the faith of our sanitarians even ten years ago. Colonel George Bushnell of the United States Army Medical Service has recently published a summary of this evidence. Having epitomized the now substantial literature testifying to the havoc wrought by tuberculosis upon a native race exposed to the influences of civilization suddenly, having made it appear that these ravages are largely independent of the goodness or badness of the conditions of life, and having contrasted the extent and clinical evolution of the tuberculosis of the civilized races with that of the savages, Colonel Bushnell writes:

"Civilized man can never escape the dangers of infection with the tubercle bacillus. But if we did escape the danger of infection, we should also lose the benefits of tuberculization. . . . At the time when control of expectoration first bulked so largely in the eyes of the sanitarian the community was divided in his thought into two classes as respects tuberculosis, the tuberculous and the healthy. Very slowly and reluctantly since that time the knowledge of the true facts has been acquired, and still more slowly and reluctantly has it been disseminated—in fact, it still seems incredible to many that tuberculization should be so wellnigh universal as it undoubtedly is. If it seems likewise a terrible fact that conclusion is erroneous. The error lies in the assumption that tuberculosis is necessarily an evil. We fix our eyes upon the advanced case of tuberculous disease, a pitiable sight indeed, and that for us spells tuberculosis, but we forget that such a case is the comparative exception, the illustration of a failure in immunization; we forget that the majority of the population never know that they are tuberculized!" (182). Dr. K. F. Andvord of Christiania, in a very suggestive paper issued a few months ago, has reached conclusions which differ from those epitomized by Colonel Bushnell in one respect, but in others are similar to his. Dr. Andvord holds that in a tuberculized community the source of nearly all fatal tuberculosis of adult life is infection during the first year, the fatal issue being a consequence of auto-reinfection. To support this thesis he relies upon two lines of argument. In the first place, the direct evidence of Bergman of Upsala, who has investigated the after-history of 1,004 children of tuberculous families. Bergman found (I am epitomizing at secondhand—the original is not accessible to me) that all the persons in his sample who died of tuberculosis in childhood or adult life and 90 per cent. of those still alive but suffering from clinically demonstrable tuberculosis had been exposed to infection within the first years of life, but that not a single death from tuberculosis could be found amongst those whose exposure had been deferred until after the fourth year. In the second place, Andvord shows that the age incidence of fatal tuberculosis, and the statistical observations of Dreijer, Bang, Harbitz, and others on the frequency of a tuberculous or "pre-tuberculous" condition, may be reconciled on his hypothesis. Hence he thinks "the most effective prophylaxis would be the protection, by every possible means, of children, notably those in the first three or four years of life, from the more *severe* infections, either by removing the source of infection from the children's neighbourhood, or, if possible, by the isolation of the children" (115). He also thinks it necessary to obtain more accurate knowledge of the stages which precede pulmonary tuberculosis, particularly in late childhood and adolescence, and "at least as important to attempt to minimize or remove predisposing causes, and thus possibly to prevent re-auto-infection as to protect the individual from the danger of infection by his surroundings" (116). A practical conclusion in harmony with that of my distinguished predecessor in this lectureship, the late Dr. Bulstrode.

I have not cited these results because I hold them to be ascertained truths (the reasoning seems to me loose, and the total neglect of selection strange), still less for the purpose of twitting those who have rebuked the medical shortcomings of the lay biometricians with being themselves somewhat in the rear of the pathological march of mind. But I may fairly claim them as justifications of the standpoints of Professor Karl Pearson, Dr. John Brownlee, Professor Raymond Pearl, and, if I may venture to add my name to this distinguished company, myself. Whether it be true in the more general sense of Colonel Bushnell's argument that the fatal evolution of tuberculosis in members of a tuberculized community is a function of environment in its most general expression; or whether, as Dr. Andvord believes, this pathological accident can only occur to those infected early in life; or, again, whether a change of survival values be not the really significant thing: to discover the intrinsic or extrinsic factors *over and above the bacillary infection* is an object of the greatest importance. We cannot afford to neglect the intrinsic predisposing factors to which Professor Pearson has devoted attention, the contrasting epidemiological types which Dr. Brownlee has displayed, or the general physiological

and economic procatarctic factors which fascinate me. But if this be true we must accept the corollary that now and for many generations the statistical method will be needed; the time is not yet when the harvest can be separated into wheat and tares by some more exact methods of the laboratory; we do not know which is wheat and which tares. For these reasons the statistical method must be ranked *not* as the *only* but as one of the principal instruments of research in preventive medicine and epidemiology, and should be a more serious item in the training of the student. It is discreditable to our intellectual culture that the young sanitarian learns little of statistics and nothing of history.

Etiology.

Let us now return to the etiology of industrial disease and examine particularly the case of phthisis. If my general line of argument be correct, we ought first to examine the broad distinctions between industrial and non-industrial employment. Obviously the first and most general distinction is that those industrially employed are for the most part inhabitants of towns. I have already spoken at some length of internal migration, but there still remains much to be said upon the point. The conditions of life to which the youth in the country is exposed are widely different from those awaiting him as a factory employee. In the professional classes the transition first from the home to the public school, then to the university, and finally to the office or consulting-room, is usually without abruptness. But it needs little imagination to perceive that for the lads and girls who leave our country districts in search of employment the transition may be a very sudden one. More than sixty years ago this subject received incidental notice in a classical report by the late Dr. Edward Smith, F.R.S., on the health of the London printers. Dr. Smith examined a number of young apprentices, and observed that "usually they are pale and thin, with sunken features and large pupils, but in other cases they are fleshy and have colour, and do not show a low type of health. Very generally they affirm that they are well, take their food heartily and digest it well, and have not degenerated in health." He adds: "It has been stated that country boys sooner lose flesh and colour than town boys, and are among the earliest to fall into serious disease" (Sixth Report of the Medical Officer of the Privy Council, 1863, Appendix, p. 386). When one considers that an indoor trade imposes upon the young peasant a way of life very different from that of the village, and that his earning capacity is small, it would not be surprising if the physiological conditions of his life were extremely unfavourable and the opinion quoted by Dr. Smith well founded.

If one, purely for the sake of argument, assumes that a change from rural conditions to urban life *is* a factor of sickness and mortality, then it follows that the mechanism of the deterioration, its etiology in a narrower sense, should be discussed, if only because in testing the general hypothesis it may be practicable to assemble particulars which would also throw light on the mechanism of any change. Three contributory causes are suggested: (1) Changes of diet; (2) reduction of bodily exercise; (3) the immediate effects of atmospheric change.

The Factor of Nutrition.

In 1862 Dr. Edward Smith carried out the widest survey of the dietetic habits of the poorest working people which has yet been undertaken here, a study which is in urgent need of repetition. Using Dr. Smith's data and much other scattered information, Miss W. A. Mackenzie has recently published an instructive comparison between the budgets of the working classes in 1860, in 1880, and in 1914. From our point of view the estimated consumption per "man" of the poorest 10 per cent. of wage-earners is of particular interest. Miss Mackenzie's statistics lead to the conclusion that in 1860 the daily calorie yield of the purchased diet was about 2,750; in 1880 it was 3,400, and in 1914 3,150. There is a considerable increase of gross energy yield, but a far more striking increase of the consumption of fat. In 1860 the total fat of the diet was about 24 grams per "man" per day, providing rather less than 8 per cent. of the total energy; in 1880 the amount had nearly doubled, being 47 grams per day and furnishing 12.8 per cent. of the total calories; in 1914 the amount was slightly less, 45 grams, furnishing 13.4 per cent. of the calories. The best of these diets provides too little fat.

Professor Starling, in the Oliver Sharpey Lectures of 1919 (p. 72 et seq.), observed that a diet should contain such a proportion of fat that approximately 25 per cent. of the total calories were derived from the metabolism of fat. In commenting upon Smith's work, Simon noted that Irish agricultural labourers were better fed than English farm workers. But, although all the English labourers had some separated fat in the diet, this was only true of 40 per cent. of Smith's Irish sample, and in the latter the average intake was not much more than one-fifth of the English average.

These facts may be no more than a physiological translation of economic changes, since fat is the most costly ingredient of the diet. But perhaps the direct importance of the matter is greater than one usually supposes.

In 1914 Dr. A. E. Carver of Birmingham reported on an investigation of the diets of labouring families in the city. He performed a sampling experiment. A series of families, in each of which one member was tuberculous, was compared with a control series. Pains were taken to secure an equal distribution of incomes in the groups compared, so that there was no economic bias. Family budgets were analysed with great care, and the diets were finally expressed in "man" values on the lines of Atwater's investigation. The result was to show that, both in respect of total energy yield and in consumption of fat, the families containing tuberculous members fell much behind the controls.

The samples were small, but a study of the figures (for which I have to thank my colleague, Miss Newbold) makes it improbable that they are samples of a common "universe"—in other words, the difference is not very likely to be a chance error.* Of course, there are material difficulties of interpretation. Further study of dietetics has made it probable that Atwater's original coefficients, which Dr. Carver used, have not the right weights, and that they appreciably overestimate the "man" value. But, as the proportion of children was rather higher in the tuberculous than in the healthy families, this method of calculation would tend not to exaggerate but to minimize the difference. A much graver difficulty is that of deciding whether the tuberculous families were tuberculous because they were inadequately fed or whether the sequence should be reversed. In Dr. Carver's sample of tuberculous families in receipt of 30s. to 35s., of 30 children in eight families 10 were tuberculous; 6 of the 8 women and 1 man were tuberculous. In his most prosperous group 13 of the 32 children were affected and 3 adult women. When one is sick it is hard to consume rich food, and there is some danger of reasoning on samples of this kind being *ex post facto*. Yet the observations are suggestive. The following is no doubt a still weaker argument. The standardized death rate from tuberculosis of Irish cotton operatives in the Fall River experience was 5.79 per mille for males, 4.97 for females; for non-Irish operatives 2.15 and 2.98. For non-tuberculous diseases the corresponding rates are 4.33 and 6.46, 2.97 and 3.78 (Perry, 198). The mean populations at risk were, however, only 768 Irish males and 1,642 females, the non-Irish amounting to 10,520 males and 11,568 females. The total deaths were 169 Irish and 640 non-Irish.

It is by no means certain that the diet of the Irish peasant is as good now as it was sixty years ago; probably it is less rich in fats. (See Report of Irish Milk Commission, Cd. 6936 of 1913, pp. 11-12.) If the prima facie interpretation of Dr. Carver's statistics be the true interpretation, some light is thrown upon the American industrial mortalities. Whether, as some hold, fat is *not* replaceable in human metabolism by isodynamic quantities of carbohydrate (for a critical discussion see Krogh and Lindhart), or whether the accessory food factors should be invoked, are questions which the data do not warrant me in raising. But I agree with Professor Collis in thinking that diet, quite apart from its energetic sufficiency (that an energetically insufficient diet is one of the great procatarctic factors of tuberculosis the experience of Central Europe since 1916 has made seem probable), must be taken into consideration. That this is a matter which will especially affect the emigrant from the country into the town is likely. A good many townsmen and townswomen, born and bred, get very poor value for their money in food marketing. The inexperienced stranger is in a still worse case.

"Without claiming that nutrition is the only factor at work in determining the result of infection," writes Dr. Carver, "we consider that indirectly its influence is a most responsible one" (p. 7). The claim is, I believe, well founded.

Bodily Exercise.

Passing now to the second category, the lack of bodily exercise, I have little need to do more than refer to the case stated by my predecessor Wing-Commander Flack. It is not a very rash speculation to suppose that, bad as are the consequences of failure to use all parts of the human machine in any of us, a transition from hard manual labour in the open air to the specialized and cramping movements of a machine tender will be particularly resented by the human body. At present we have hardly any data, none relating to the factory class. But the observations of my colleague Dr. Lucy Cripps upon young women of the middle class reveal such an enormous difference between the standards attained by apparently healthy young women and those of the youths who offer themselves for the Royal Air Force, that it is impossible to doubt that Wing-Commander Flack and Professor Dreyer have opened up an important field of research.

* The differences are 16.9 ± 3.3 grams of fat; 392.9 ± 82.0 calories.

Ventilation.

These two categories—that of diet and that of bodily exercise—concern the individual; there remains the third—that of the whole complex of environmental influences which the individual cannot modify, which are functions of collective undertakings. In the first place there are the consequences of the localization of industries, and this in the textile manufactories is probably or certainly one determinant of the death rates from non-tuberculous respiratory diseases. So far as this is climatological, it does not admit of modification. But if the evidence summarized in an earlier lecture has satisfied you that in such towns as Bolton or Warrington the respiratory mortality is in excess of that experienced in contiguous but non-industrial regions, and that it exceeds the mortality of other industrial towns in the southern and central parts of the country, it follows that the measures advocated for the reduction of the smoke nuisance have more than an aesthetic justification.

Next we have the factory atmosphere itself and the new light thrown upon its importance by the researches of Dr. Leonard Hill and his colleagues. Like all absolutely first-rate work, its teaching seems quite obvious *when it has been expounded.* We have all been drilled in the lore of metabolism, the effects upon the respiratory exchange of the environment. Yet it had occurred to very few physiologists to inquire whether within the range of indoor employments variations could be measured and correlated with human efficiency. Dr. Hill has, I think, completely demonstrated the truth of his main propositions. The measurements made under his supervision of the cooling powers of different factories and different departments of the same factory—in addition to his own publications, mention should be made of such reports as that of Messrs. Bedford and Hambly on boot and shoe factories—establish a strong prima facie case in favour of the conclusion that by attending to the indications of the kata-thermometer we shall do much to render the equilibrium of the worker more stable and help him to resist the procatarctic factors of disease which it has been my chief object to emphasize.

Difficulties.

But before concluding I must not omit to exhibit as clearly as I can the points which the teaching I have attempted to expound does *not* satisfactorily explain. The weakest link in my chain is this: One does find certain industries—most strikingly that of printers—wherein a specific liability to a non-occupational disease is observed. The argument that the relative immunity from phthisis and the extreme liability to fatal diseases of the respiratory organs other than phthisis weighing down the later years of textile workers, is a consequence of immunity by selection—whether in the precise sense of the Calmette doctrine of tuberculosis or not—and of subsequently deleterious environmental influences destroying resistance to other pathogenic organisms, this argument is plausible. The explanation of the peculiar position of the Midland shoe operatives in relation to phthisis as a consequence of unfavourable industrial selection and a more favourable subsequent exposure is also a plausible argument and deserving of full verification or rebuttal.

But *neither* argument satisfactorily explains why a skilled trade, carried out under a diversity of climatological and economic conditions and not subject to a high death rate from all other causes, should occupy the place it does with regard to phthisis mortality. It is easy to show that the atmospheric conditions in printing establishments are often unsatisfactory, but the results which I have seen do not suggest that printing shops are worse than other factories. We must, therefore, admit the possibility that some special and hitherto undiscovered influences are at work. To reveal these both laboratory and field investigations are necessary. Of the former, the special technical studies of conditions which may favour the growth and virulence of the infecting organism, I have not to speak. Of the latter I would remark that here, as in so many branches of industrial hygiene, we are hampered by the fact that few trained scientific observers have sufficient familiarity with industrial conditions to be competent to make investigations. Fortunately, the recruitment of such men as Dr. H. M. Vernon into the army of industrial research workers, and the important results already obtained—for instance, in Dr. Vernon's studies of the tinplate industry—hold out great promise for the future. What is needed, and is at length being obtained, is a dispassionate study by scientific men of *all* the circumstances of industrial employment. A great many Balaams have set out to deal with the problem of disease; few of them have been broad-minded enough to take a hint from the ass—a beast quite untrained in scientific method but with a good deal of practical experience. It is a fault not to see the wood for the trees, but one will not be wise to ignore all but a few of the trees.

General Conclusions.

Nineteen years ago the late Dr. Bulstrode ended his course of Milroy lectures with these words:

"If I were told to select three, and three only, of the agencies with which I have in some degree dealt in these lectures as those upon which, assuming always a sufficiency of food, I would place most reliance as regards the control of pulmonary tuberculosis, I should arrange them somewhat in this order. (1) The education of older children in the principles of health, and the periodical physical examination of all school children with a view to improving the health of those prone to tuberculosis, or who may already be suffering from the disease in an unrecognized though not unrecognizable form. The direct and indirect results which would accrue from this would soon make themselves felt in the direction of an unwillingness on the part of the people to occupy slums or to dwell in places where the sun rarely penetrates. It would also result later in a return to local and perhaps central administrative bodies of representatives who were more alive to the importance of the public health aspect of their duties than is always the case at the present time. (2) Some such system of compulsory insurance against sickness and invalidity as obtains in Germany, and which, it is important to note, makes for the provision of sanatoriums, the support of those threatened with illness, and the general well-being of the poorer classes. (3) Better housing and improved conditions of employment of the working classes—that is, more light, more air-space, better ventilation, and greater cleanliness in the home, the workshop, and the factory" (442).

Much has been done in the last twenty years to satisfy these requirements, but there has, perhaps, been overmuch insistence upon particulars, too little regard for general principles. My aim has been to restate some of the broad epidemiological principles which inspired Dr. Bulstrode, to show that their applicability is even wider than to the case of tuberculosis, and to plead for a physiological philosophy of disease.

The ideal physician of Linacre was a man of wide and various learning, and the College has always placed this ideal before its alumni. Translated into practice it means, I suppose, that in our secular warfare against disease we must use *all* the intellectual weapons we have, and not vainly assert that this or that instrument is alone of value. If in these lectures I have dwelt upon the general reactions of the environment in disposing man to fall a victim to this or that antagonist, and upon the aspects which are most easily displayed by statistical inquiry, it is not because I undervalue other elements of the problem or other methods of research.

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ANEURYSMS OF THE THORACIC AORTA INVOLVING THE LUNG.

BY

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THE two cases of aneurysm of the thoracic aorta described below present several features of considerable clinical and pathological interest. Both aneurysms ruptured within a fortnight of each other while under observation in hospital, and in each case the aneurysmal sac produced extensive changes in the lung. The second case was particularly interesting in its close simulation of chronic pulmonary tuberculosis.

CASE I.

W. H., widower, aged 53, a commercial traveller, was admitted to Hampstead General Hospital on January 31st, 1922, with a history of four years' gradually increasing dyspnoea on exertion. There were also attacks of more acute dyspnoea, coming on chiefly at night, and lasting from half an hour to an hour. Pain was felt at the back of the shoulders and down the right arm, with a general feeling of tightness in the chest. This was also worse after exertion. He had a chronic slight cough, and at times suffered from palpitation. There had been no dysphagia, no oedema, and no haemoptysis. He did not think he had been losing weight.

Two days before admission he suddenly collapsed after getting up in the morning, and lost consciousness for three-quarters of an hour. On recovering he felt very weak, and complained of pain all over the chest; later he developed a troublesome cough with haemoptysis. He had always been healthy previously.

Condition on Admission.—The patient was a rather thin and anaemic man in a very weak condition. There was very little dyspnoea while at rest. There was a pulsating swelling immediately to the right of the sternum, having an area of about 2½ square inches, and considerable diminution of movement of the right chest. The percussion note was dull all over, back and front, while the breath sounds were very weak and bronchial. Vocal fremitus and resonance were increased. There were no adventitious sounds. The pulse rate was 70, and the rhythm equal and regular. The volume was moderate and tension poorly sustained. There was no inequality of the radial pulses. The cardiac apex was in the fifth space, 1 inch outside the nipple line, and was heaving in character. The heart sounds were normal, and were heard clearly over the swelling. The systolic pressure was 145 mm. and the diastolic 110. The left pupil was slightly larger than the right.

Progress.—The patient remained fairly comfortable in bed for over a month. The cough and haemoptysis continued. There were occasional slight attacks of dyspnoea. The only fresh sign that developed was a slight oedema of both forearms. The temperature varied from 98° to 101° F. On March 7th, at 5 a.m., free haemorrhage took place suddenly from the mouth, and the patient died in five minutes.

Post-mortem Examination.—A small mass of blood clot about the size of a large walnut was found immediately beneath the chest wall in the region of the swelling noted before death. The left lung was large and emphysematous, and covered the left border of the heart and pericardium. About 12 oz. of dark yellow fluid were present in the right pleural cavity. The right lung appeared shrunken, was dark in colour, and felt solid. It was not possible to distinguish the lobes. The heart was small and appeared normal. The aorta about one and a half inches above its origin opened into an aneurysm about the size of a foetal head. It occupied what appeared to be the right lung, the remnant of which was stretched over the sac as a thin shell. The cavity of the aneurysm was full of laminated clot, which dropped out through the anterior wall of the sac, and was directly continuous with the walnut-like mass above mentioned. The aorta was atheromatous, and showed marked syphilitic arteritis.

CASE II.

Mrs. E. S., a widow, aged 50, employed as a cook, was admitted to hospital on March 12th, 1922, with a history of six months' illness of gradual onset. Her chief complaint was pain round the lower part of the chest, "crushing" in character, coming on directly after food. There was no vomiting, but considerable flatulence. The appetite was poor, and she did not sleep well. She had been getting much thinner recently. There had been no night sweats. There was slight dyspnoea on exertion. For the past month she had been bringing up blood by the mouth; she said she coughed up a little every day mixed with frothy sputum, the blood being sometimes bright in colour and sometimes dark, while at intervals of about a week she brought up larger quantities (about half a pint) in clots. These large quantities she thought she vomited, although solid food was never noted in the vomit.

Condition on Admission.—The patient was a wasted, anaemic woman. There was moderate enlargement of the terminal phalanges of the fingers. The temperature was 100° F., pulse rate 100, and respirations 24. On inspection of the chest there was definite flattening at the left apex with diminished expansion. On palpation there was slight pulsation below the left clavicle. The percussion note over the left apex and subclavicular region in front and over the left apex behind was dull. Towards the outer part of the dull area the breath sounds were diminished, and vocal fremitus and vocal resonance were less than normal, but internal to this loud cavernous breathing was heard. A few fine crepitations were present. The pulse was equal and regular, of small volume and moderate tension. The apex beat was in the fifth space within the nipple line, and there was no enlargement or displacement of the heart. The sounds were normal.

Progress.—For the first two days after admission the patient was continually bringing up clotted blood in small quantities. The blood appeared in the pharynx without effort, and was unmixed with sputum or food. There was a slight cough, but the blood did not seem to appear with the cough. No sputum was obtained. On the second day after admission she had a sudden and severe haemorrhage; she became blanched and almost pulseless at the wrist. However, she made a fair recovery from this attack, but the bleeding continued, and at times the blood was undoubtedly mixed with fluid stomach contents. Melaena was a marked feature in the case during this time. Pain in the upper left chest was also complained of. The temperature varied from 99° to 100° F. The patient gradually became weaker and more anaemic, and died quite suddenly, but without external haemorrhage, on March 19th, seven days after admission.

Post-mortem Examination.—An ulcer about 1½ inches by 1 inch in diameter was found in the oesophagus at the level of the bifurcation of the trachea. Through the base of this ulcer a mass of blood clot presented. The trachea was normal. The upper half of the upper lobe of the left lung was heavy, deep red in colour, felt solid, and was adherent to the thoracic wall. An incision showed a mass of dense laminated blood clot of a pale buff colour, around the periphery of which was stretched a thin layer of lung tissue. The mass was about the size of a large orange, and contained a cavity no larger than a walnut, which communicated with the arch of the aorta. The lumen of the aorta itself was scarcely altered. There was slight atheroma and syphilitic aortitis. The heart was small, and the valves were normal. The right lung was quite healthy. The intestines contained a considerable quantity of altered blood.

The way in which, in the first instance, a whole lung, and in the second instance a localized part of the lung, were converted into aneurysmal sacs is one of the most interesting features of these cases. The strength of the sac in each instance seemed to be in its dense lining of laminated clot. As regards the origin of the bleeding, in the first case it probably came from the remains of the bronchioles in communication with the sac, while in the second case it is possible that there was a double source of haemorrhage—from the lung and from the oesophagus. Another observation which is well exemplified is the remarkable pathological changes that can take place in the thoracic aorta without producing any change in the cardiac musculature. In the first case the heart was certainly displaced, and, clinically, appeared to be hypertrophied; but the *post-mortem* examination showed that in neither case was there any hypertrophy or dilatation.

Clinically, Case II presented an interesting problem in diagnosis. The history of progressive wasting, cough, and haemoptysis, together with the localization of the physical signs to the left apex, pointed to an apparently advanced case of chronic pulmonary tuberculosis with cavitation. The

slight pulsation present suggested the possibility of aneurysm, but this diagnosis appeared so unlikely that it was dismissed; it was supposed that the pulsation was conducted from the base of the heart uncovered by retracted lung. There was also some difficulty in determining the source of the haemorrhage, but this seemed explicable by ascribing the haematemesis and melaena to blood swallowed from the lung. Indeed, the symptoms of pain after food and haematemesis had resulted in the case being sent in as carcinoma of the stomach.

I am indebted to Dr. G. A. Sutherland, under whose care both these cases were, for permission to publish these notes.

THE RADICAL CURE OF HAEMORRHOIDS:

MODIFIED WHITEHEAD OPERATION.

BY

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I WISH to invite again[1] the attention of surgeons to a very simple method of performing the only operation for the cure of haemorrhoids which, in my opinion, is worthy of the term "radical." And it affords me intense gratification to be able to state that in 1904 the distinguished originator of the procedure honoured me with his approval of my humble modification[2]—namely, that primary dilatation of the external sphincter entailed an unnecessary magnification of perspective which might readily induce anatomical obfuscation with disastrous operative results.

Method.

1. Limit primary dilatation to the insertion of the right index finger in quest of concomitant polypi, ulcer, stricture, etc.

2. Apply a pressure forceps at junction of skin and mucous membrane to each of the four cardinal points of the anal circle.

3. With adjoining pairs of forceps held in opposing traction make a rapid discission with a large straight blunt-pointed scissors from "point" to "point" until the skin is completely detached from mucous layer.

4. Apply another pressure forceps to the cut edge of the latter between each of the four forceps originally placed. This makes the operator master of the situation.

5. Grasp the eight forceps in the palm of the left hand, insert the left index finger into the rectum, and then cut lightly all around with scissors until the external sphincter appears well in view.

It is absolutely essential at this juncture to define this muscle and keep it constantly in sight and pushed upwards, always remembering that all cutting must be done below and external to it.

6. Continue snipping round with scissors until the "Whitehead adit"[1] (submucosa) is exposed; then bear Cunningham's *Anatomy* in mind: "The submucous coat is composed of loose areolar tissue, which allows of free movement of the mucous layer on the muscular coat, and which also admits, under certain abnormal conditions, of a prolapse of the mucous membrane through the anal orifice. . . . The haemorrhoidal plexus of veins is contained in this layer."

7. With the left index finger still retained in the rectum as guide, and the eight forceps in the left palm making traction, continue severance of the attachments to the muscular coat until the haemorrhoidal cylinder can be peeled out of its bed by a few strokes of the back of scissors or other blunt dissector.

8. Then make a vertical slit in the protruded cuff up to the level of the "supra-Morgagnitic"[1] circle; commence a continuous Triollet catgut suture at the apex of the slit, drawing the "red" mucous membrane into accurate apposition with the skin; then proceed, cutting transversely, half-inch by half-inch, at the level just mentioned; carry on, *pari passu*, the continuous suture; stop and forceps every spurting vessel and ligate same at once, so that at the last snip of the scissors nothing remains to be done except to complete the few final loops of the suture.

Abjure the employment of what is fatuously styled by clampers "a continuous haemostatic suture,"[3] and of what is called by tinkers a soldering iron, in any part of the intestinal tract.

9. Having introduced a morphine suppository and a slender roll of dry gauze into the rectum, apply a dry gauze dressing and change same daily.

10. On the fifth morning give the patient one ounce of castor oil, sponge the part after each evacuation with warm permanganate lotion, add a warm permanganate sitz bath daily, and reapply a dry dressing.

11. On the seventh morning instruct the nurse to insert the right index finger (anointed) into the canal, and to educate the patient to do the same daily for two months. Do not forget, before he departs, to prescribe a pot of zinc and boracic ointment for this purpose. If any tags are in evidence on the ninth day apply a little eucaine and snip them off with scissors.

I have nothing further to state beyond the fact that not once in every fifty operations do I hear of any contraction or any other complication following this method. All the patients are discharged cured by the fourteenth day, and the time[4] occupied in the actual operation varies from five to ten minutes.[5]

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AN AORTIC MURMUR.

As early as 1910 I noticed an aortic systolic murmur in apparently healthy persons. I observed it first in my own case, and after that in many infirmary patients, and later in many recruits and serving soldiers.

I was encouraged by Dr. James of Edinburgh to investigate the murmur, and, as mentioned by me in a letter to the JOURNAL recently, I had satisfied myself as to its cause and written an account of it before the war. It is heard over the aortic area, is systolic, and has generally the characteristics of an aortic stenotic bruit. The probable explanation was arrived at by a study of the flow of water in a rubber tube with a Higginson's syringe for the propelling force. If the tube be auscultated, the flow of water being kept up by the pressure of the foot on the ball of the syringe, a bruit can be produced by applying pressure to the tube. It is produced either by proximal or distal pressure, but is more audible in the former—that is to say, the sound is propagated against as well as with the flow of the water.

From this experiment I conclude that pressure on an artery such as the carotid produces a bruit which will be propagated both with and against the blood flow.

If the aortic area be auscultated and pressure be made with the finger so as partially to occlude the subclavian artery above the clavicle, a distinct systolic bruit is heard. In the actual patients it was sometimes present and at other times absent. It was found that the drawing aside by the patient of his clothing to permit of auscultation brought the sound into existence, and that with the arms by the side it could not be heard.

The subclavian artery passes over the first rib and under the clavicle, but is separated from the latter by the subclavius muscle, the action of which is to approximate the rib to the clavicle. Other muscles perform the same action—namely, the scalenus anticus, the deltoid, the pectoralis major, and also the pectoralis minor.

It would therefore appear that the artery can be, and is, very easily compressed by muscular action, and that when so compressed a bruit can be heard. Many persons by contracting their muscles can obliterate the radial pulse. The bruit can be obtained in almost any person. I have heard it in children, young adults, and elderly persons, and think it would be obtained in anyone provided the artery wall was compressible and the compressing machine in working order. The bruit would not be heard in a patient who was stripped to the waist and had his arms by his side.

While I do not think the bruit is of clinical importance, as it often occurs in medical examination for life assurance, I think it warrants an explanation.

My conclusions are: (1) That an aortic systolic bruit is very frequently heard over the aortic cartilage in the absence of any diseased condition. (2) That a large proportion of such bruits are due to the position of the arms at the time of examination, or rather the state of contraction of the muscles

of the shoulder girdle. (3) That such bruits will mostly disappear if the patient is stripped to the waist and has his arms hanging loosely by his sides.

Perth. THOMAS LINDSAY.

STREPTOCOCCAL SORE THROAT.

THJÖTTA has reported an epidemic of angina faucium in a Norwegian military camp last July. During the past three months I have had seven cases of what I termed septic sore throats very similar to those described by Thjötta—three in one household and two in two other families. The symptoms were almost identical in all the cases—namely, high fever, general pains, and marked dysphagia; in all the fauces were highly congested; in four the tonsils showed discrete collections of débris which spread and coalesced, covering the entire tonsil but not spreading beyond. In the remaining three cases punctate collections of membrane appeared, and within a few hours covered the surface of the tonsil with a whitish, easily detached membrane. These three cases clinically appeared so much like diphtheria, that in two of them antitoxin was given as a precautionary measure. In five of the cases bacteriological examination during and after the attack gave a pure streptococcal infection. In two there was a diphtheroid bacillus as well.

In the first household the first and second cases each developed quinsy after a week. The third case clinically was so much like true diphtheria that it was kept under observation for three weeks; antitoxin was given as a precautionary measure, although the swabs only showed streptococcal infection. All the cases recovered.

London, S.W. A. MACBETH ELLIOT, M.D.

Reports of Societies.

HOSPITALS OF THE FUTURE.

THE annual oration of the Medical Society of London was delivered on May 8th by Mr. H. J. WARING, C.B.E., F.R.C.S., who put forward some suggestions with regard to the future of hospitals, public and private. The President, Mr. JAMES BERRY, occupied the chair.

Hospital Provision for the Non-Necessitous.

Mr. WARING said that during recent months there had been a good deal of discussion concerning the position of medical men in hospitals, mainly with regard to the allocation of money paid as contributions towards maintenance either by the patients themselves or by some public or other body on their behalf. All this discussion appeared to have centred around the rights of the medical staff, while the rights of patients and of the hospitals themselves had been less debated. He proposed to discuss the hospital question on a broader basis. The so-called voluntary system was well established and would continue in this country. The people would continue to provide funds for the maintenance of the hospitals, to which at all times the necessitous poor would be admitted; and the medical profession also would continue to act as a profession, and would not become a trade, with a trade union to dominate its policy and retard its progress.

Since the establishment of our voluntary hospitals the benefits of those institutions in the investigation of disease and its treatment had been available to the necessitous poor, with the result that the poor had been very much better provided for than the upper and middle classes. The general public had now realized this fact, and within the last decade there had been an increasing demand on the part of the non-necessitous for entrance as in-patients into voluntary hospitals. These people had come to recognize that the diagnosis and treatment of disease with expedition and success could be carried out better in a large and properly equipped public institution than in a nursing home, which was very often an ill-adapted, second-class, mediocre private residence. The prejudice against public medical institutions, which had lingered on from pre-aseptic days, had now disappeared.

The population from the hospital point of view might be grouped into five classes: (1) The necessitous poor who could make no contribution; (2) the necessitous poor who could make a small contribution towards maintenance, but nothing towards medical treatment; (3) the necessitous, but not always poor, who could afford the cost of their hospital accommodation and maintenance, but could not pay for medical treatment; (4) the middle classes, who could pay for ordinary hospital accommodation and maintenance and moderate fees for treatment; and (5) the opulent. The first three of these classes were already provided for, but there was no accommodation in the general hospitals for the other two.

Annexes for Paying Patients.

The solution of the difficulty with regard to the middle classes and the better-to-do, who had hitherto not been able to obtain the standard of institutional attention and treatment open to the necessitous, was to build a separate block distinct from but affiliated with the public hospital. Most hospitals were not built in such a way as to allow of the necessary reconstruction to admit these classes of patients; moreover, in most instances the funds utilized for the building of those hospitals had been given or bequeathed for charitable purposes. On the other hand the special departments, such as the pathological laboratories, the *x*-ray rooms, and so forth, were sufficiently equipped to serve not only for all the charitable purposes, but for paying patients as well. Mr. Waring showed plans which he had prepared for a private block adjacent to a public hospital. On the ground floor there were consultation rooms and offices, recreation rooms for patients, and a convalescent dining-room, as well as laboratories and the like which were subsidiary to the corresponding departments in the main building. On the floor above there were a number of patients' rooms for medical and surgical cases, most of them single, provided with bath and lavatory, and in some cases with sitting-room adjoining; others contained two or four beds. On the floor above this similar provision was made for maternity and gynaecological cases, and on the top floor were operating theatres and sterilizing rooms.

The advantages of this scheme to the patients were that numbers of upper and middle class people would be able to obtain institutional accommodation and treatment of the same high standard as that provided for the necessitous poor. To the hospital itself it would bring the advantage that the special departments could be more fully and continuously used than was the case at the present time, while overhead charges for general administration would not be proportionately increased, and such charges could be shared to a proper extent by the paying department. A hospital he had recently inspected included a separate building in which there was accommodation for a hundred paying patients. This was built and equipped by a generous donor who had himself been a paying patient in the public wards. The new block was managed by the general hospital, and yielded a profit of £10,000 a year, which was available for the charitable operations of the institution. Again, there were advantages to members of the hospital staffs, who would be able to have a certain number of their patients in the paying department, thereby saving themselves time and journeys.

Improvements in Existing Public Hospitals.

Mr. Waring then made some suggestions for the improvement of the ordinary public hospital. He thought, in the first place, that there ought to be more maternity accommodation. He was told by an eminent obstetrician that the mortality in connexion with maternity was now little different from that which obtained in pre-aseptic days; no doubt insufficient accommodation contributed to this result. It was desirable also to limit the routine dispensing of medicine and drugs, which was often on too liberal a scale. Another deficiency of the ordinary hospital was lack of accommodation for dental cases. Then the buildings themselves were often unsuitable. There was a widespread notion, not limited to the laity, that any comparatively decent building of suitable size could be converted into a satisfactory hospital. Whenever possible hospital buildings should be specially erected for the purpose, and when they became antiquated they should be scrapped. It was a great mistake to patch up old buildings, and it might be wise to scrap every hospital building which had existed for fifty years. He suggested that the King's Fund, in association with the Royal Colleges, should set up a small consultative body to advise upon the building, reconstruction, and modernization of hospitals. In general hospitals there was not sufficient provision of small rooms for the seriously ill and the moribund. It would be an enormous advantage to members of the staff and also to patients if small rooms were provided. Another need was for some clinical laboratories in connexion with hospital wards or clinical units.

He advocated also the standardization of hospital equipment. There was too much tendency in all hospitals for every medical man to think that he was in a position to order

whatever equipment he required for his own particular fads. The same thing applied to the sterilization arrangements. If the hospitals would work on some simple standard plan they would get their plant at half the cost. The accommodation for the nursing staff was often defective. He did not approve of the nursing staff being housed in the attics or any ill-adapted part of the hospital. The nursing staff should have its own special block. Again, the administration of many hospitals was unsatisfactory, due to the multifarious duties of the administrator; the work of the director of a hospital should be separated from that of the head of the appeal department. Medical men as a rule did not make the best administrators of a hospital.

As for private hospitals, many of these were originally private dwellings in which no reconstruction had been carried out and no provision made for scientific investigation. He showed plans of an ideal private hospital, very much on the lines of the private block already described, with special consulting rooms for physicians and surgeons on the ground floor, accommodation for medical and surgical cases on the first floor, for maternity cases on the second, and for the operating theatres and their accessories on the third. It had always seemed to him very curious that English people when on holiday took a suite of rooms at the best hotel they could find, but when they were ill they were prepared as a rule to go to a third or fourth rate lodging-house in a back street.

Lord Knutsford's Criticisms.

Lord KNUTSFORD, who approved of Mr. Waring's suggestion regarding the additional provision for maternity cases, said it was a scandal that in a hospital with a thousand beds only ten or fifteen should be set apart for "the natural disease of having babies." He believed that the dental department should be in a separate hospital. Standardization of hospital equipment was of all things most abhorrent to him; it always meant the stereotyping of the second-rate. The greatest check upon extravagance would be to require that before a medical man could order anything he had got to get three of his colleagues to agree. This would not be difficult, with amenable juniors. He did not see why a paying hospital should be mixed up with a voluntary hospital at all. His idea of a paying hospital was a really well built hospital, with a resident surgeon, and, conspicuously displayed in the entrance hall, a scale of inclusive charges, so that a patient who had to undergo a particular operation would know exactly what it would cost him. He derided the idea that hospital buildings should be periodically scrapped. If they followed changes in architectural fashions the London Hospital might have been entirely rebuilt three or four times, and structurally be out of date even now.

SURGICAL SHOCK.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, on May 4th, with the President (Professor HENRY BRIGGS) in the chair, a paper was read by Mr. JOHN D. MALCOLM on "Surgical shock." He said that surgical shock was attributed to an irritation of sensory nerves. The expression was not intended to indicate an association with surgery so much as a freedom from haemorrhage, crushing of tissues, septic infections, and other complications which often accompanied accidents. Moreover, an accidental uncomplicated stimulation of sensory nerves frequently caused an instantaneous development of all the symptoms of profound shock, whereas during a surgical operation the changes occurred gradually, and their relationship to each other might be defined. The essential sameness of an immediately and a gradually developed shock was assumed. The condition was now rare in surgical work, but the following facts might still be noted if carefully looked for. During a severe operation the heart's action might hasten early, in which case an important feature of developing shock was not recognizable; but in a fair number of prolonged operations, when the patient's heart muscle was strong, the pulse rate for a time hardly quickened. In these circumstances there was at first a full radial pulse, which gradually diminished and might disappear completely whilst the carotid remained forceful and slow. After a time the cardiac action hastened, the pulse became feeble or disappeared everywhere, and the blood pressure fell. The tissues were now absolutely blanched, and medium-sized vessels did not bleed when divided. The vascular system became as depleted as in a case of severe haemorrhage, although little blood might have been shed. The temperature fell very low, and perspiration was profuse. Recovery used to be slow and to cause much anxiety, but since fluids had been freely administered a return to normal conditions was generally rapid. The improvement thus brought about offered a proof that as shock developed fluid was removed from the body. The clinical evidence was regarded as conclusive that stimulation of sensory nerves caused a persistent vascular contraction in spite of the rise of blood pressure in the large arteries which was created by their contraction and by an augmented cardiac force. But contracted arteries necessarily held less fluid than full-sized vessels, therefore fluid must leave them as they contracted. The escape of fluid was accompanied by a fall of blood pressure, which was compared with the loss of pressure that occurred in any piece of machinery actuated by hydraulic force when a leakage took place.

The effects of haemorrhage during a developing shock were considered. It was shown that in shock as in haemorrhage fluids were transferred within the body so as to correct abnormal relative pressures. This did not necessarily involve a filtration such as occurred through a dead membrane under pressure, and it was not considered inconsistent with Professor Leonard Hill's teaching that imbibition of fluids by living animal cells was a vital process. When the vessels contracted fluid must leave them; it must be taken into the tissues; the necessary imbibition was controlled by the nerves in accordance with the needs of the body. Mention was made of cases in which the sweat glands could not be induced to act, in which, therefore, fluid did not leave the body, and in which the clinical symptoms of surgical shock did not exist. Evidence was quoted that it was difficult to introduce fluids into and retain them in the vessels when shock was severe and profound. This difficulty, and the facility of absorption of fluids during convalescence, were easily understood if the vessels were tensely contracted when shock was fully developed and relaxed as recovery took place. The facts were not readily reconcilable with the teaching that some part of the vascular system dilated during shock, and therefore contracted during recovery. The chief object of the paper was to insist upon the view that a state of shock did arise from an uncomplicated stimulation of sensory nerves. It was considered of supreme importance for the understanding of many surgical developments that shock thus induced should be clearly differentiated from similar conditions which, however exactly they might simulate shock, were produced in other ways. The conditions of spinal anaesthesia were considered an absolute proof that shock was a reaction to nerve stimulation. By anaesthetizing the spinal cord a development of shock from stimulation of nerves arising below the blocked portion of the cord was absolutely prevented.

Dr. LAPTHORN SMITH said that the paper was very valuable because it embodied the experience of one who had had a great many operation cases and in the early days had seen more of shock than was customarily seen now; in his (the speaker's) own early experience cases of shock were very frequent, but by degrees they diminished in number until they became almost unknown. It was the experience of most surgeons, he thought, that cases of shock were remediable and preventable. Many early cases of supposed shock were not shock at all, but simply prolonged anaesthesia. The length of time taken by the operation had a great deal to do with the occurrence of shock. If the operation was finished within an hour cases of shock were unlikely. The amount of blood lost was a very important factor. He was accustomed to tell his students that the likelihood of shock was greatly reduced in cases in which the intestines were not seen at all in the course of the operation. A very important precaution was to maintain the patient's warmth during the operation, and this he had done by using two pans about 3 ft. long, closed in and filled with water at a temperature of 110° or 120°, and covered with a blanket.

Dr. MALCOLM DONALDSON said that in general his experience supported Mr. Malcolm's conclusions, but he was not quite convinced by his argument that a contracted vessel must lose fluid more quickly than a dilated one. (Mr. MALCOLM said that his statement was that a contracted vessel must contain less fluid than an uncontracted one, and therefore fluid must leave it as it contracted.)

Mr. GORDON LUKER, who thought that Mr. Malcolm had proved his hypothesis, mentioned the extreme difficulty of separating shock from shock *plus* haemorrhage. He would be glad of any suggestion for distinguishing between these two conditions, for, of course, a good deal of difference in treatment depended upon such distinction.

Dr. A. E. GILES pointed out that if the arteries were contracted it simply meant that less fluid was passing through them, not that there was less fluid in the system generally. The fluid might have passed into the dilated capillary area, and so be not lost to the body but temporarily lost from the arteries. He spoke with great diffidence on the subject of shock because he had seen so little of it. He came to the conclusion many years ago that deaths ascribed to shock were very often due really to haemorrhage or septic poisoning, and that pure shock after operation was very rare; all that he had seen of surgery since had rather confirmed him in that view. Even in removing a very large ovarian cyst he had never observed anything suggestive of shock, and he believed that any such sequel must be very infrequent if the operation was done with reasonable rapidity.

The PRESIDENT said that the Section was greatly indebted to Mr. Malcolm for the way he had pursued this problem. He emphasized the difficulties of the subject and the need for further scientific work upon it. He believed that the leakage of fluid must pass to the capillaries.

Mr. MALCOLM, in replying, said that he did not think that the largeness of a tumour removed was the cause of shock: he agreed with Dr. Giles that such tumours could be removed without shock. Of course, time was an important factor, and the amount of blood lost was also important. Haemorrhage and shock were two quite different conditions in his mind, although they both created the same condition of starvation of the tissues. It was asked, why not give fluids? But if recent medical research was right, it was out of the question while the vessels were contracted for them to take up fluids. Undoubtedly the procedure was useful when the vessels relaxed. It had been suggested that contraction of the vessels was a means of self-preservation, but the cause of the mischief could not very well be a factor in preservation, and he did not think that in any condition of developing shock the contraction of the vessels indicated this. One absolute distinction between shock and haemorrhage was that in shock there was concentrated blood, and in haemorrhage diluted blood. He believed that this fact of concentration of the blood had been proved by the Special Investigation Committee of the Medical Research Council. As to the escape of the fluid, he believed that this was effected by passing on to the capillaries.

OPHTHALMIC PENSIONERS.

A MEETING of the Sheffield Medico-Chirurgical Society was held in the Medical Library of Sheffield University on April 27th, with Dr. GODFREY CARTER, the President, in the chair, when Mr. HERBERT CAIGER, Chairman of the Sheffield Division of the British Medical Association, read a paper entitled "Ophthalmic pensioners: some points of interest to the general practitioner." Out of 700 cases there were 7 cases of total blindness, about 50 cases of loss of useful vision in one eye, 53 cases of removal of one eye, and only one case of sympathetic inflammation; in this case the injured eye was not removed till twelve weeks after being wounded. Penetrating septic wounds of the eye, with lodgement of a foreign body, had been very numerous in the war; but, thanks to the careful work done in hospitals overseas, sympathetic cases had been very rare. Most cases of loss of vision in one eye had been caused by "concussion changes." These might be compared to the fractures in bones due to indirect violence. Bullets passing through the bones below or at the side of the orbit, without touching the eye, caused haemorrhages or ruptures in the choroid or retina. The macular region was specially affected by these concussion changes. They had been specially studied by Lagrange, who attributed them to violent oscillatory waves transmitted to the fatty contents of the orbit, almost fluid at the body temperature.

It was specially important to examine for errors of refraction in three groups of pensioners: (1) Men who had lost the sight of one eye were, as a rule, obsessed with the idea that any defect of vision that troubled them must be due to "one eye having to do the work of two." In most cases any defect of vision (except the inevitable loss of field on the affected side) was due to error of refraction in the uninjured eye, and could be remedied by glasses. (2) Cases of headache following head injuries; here headaches, very possibly due to eyestrain, were liable to be put down to the head injury, by the doctor as well as by the patient. (3) Neurasthenic cases: such symptoms as depression, or mental confusion, as well as headache, might be due entirely or in part to eyestrain from astigmatism, etc.

One interesting case of functional blindness was described. The patient had been "blown up" by a shell explosion in 1914. He stated that he lost the sense of smell, taste, and sight, but that taste and smell were soon restored "by hypnotic treatment." More or less complete functional blindness, however, lasted for two and a half years, partial recovery being followed by relapse, especially if he was subjected to worry. In 1917 cure followed treatment by isolation in hospital, blistering, and other methods, including the sudden shock of a bucket of cold water thrown over him unexpectedly in a warm bath. He presented other neuropathic symptoms, such as tremor. Complete and lasting recovery followed.

Cases of malingering of every grade had been met with. There were at least 20 cases claiming that the defective sight of an amblyopic squinting eye was due to or aggravated by service. Three cases of conjunctivitis artefacta were described. In one of these deliberately produced abrasions of the cornea were an added feature. In another case the man's documents gave a record of "persistent chronic conjunctivitis liable to acute exacerbations," commencing in 1917 and lasting almost for five years. For three years he had enjoyed a pension of 60 per cent. or more. Minute observation revealed very fine foreign particles in the conjunctival sac; when kept under observation for an hour the acute redness of the eyes diminished greatly; then, after being left alone in a room for a moment, an "acute exacerbation" followed at once, with increased redness and profuse watering of the eyes. The nature of the irritant used was not ascertained.

Only one case had been seen where gassing appeared to have caused serious permanent damage to sight; in this case the whole of the left cornea was opaque, and the lower half of the right cornea; a visual iridectomy had been done above in the right eye, and vision with glasses was 6/24.

Some cases illustrating concussion changes were shown.

In discussing the paper, Mr. P. J. HAY referred to the valuable work done in the war by general practitioners who took up ophthalmic work overseas. Dr. E. F. SKINNER mentioned some cases of conjunctivitis artefacta in schoolboys, induced by blowing slate-pencil dust in one another's eyes. Mr. A. CONNELL described a case of extensive rupture of the choroid due to indirect violence, which had occurred in civil practice. Dr. A. E. NAISH, referring to functional blindness, pointed out that the cerebral cortex possessed the power of focussing conscious attention on any particular area of consciousness—for example, sight or hearing—or, on the other hand, of completely excluding it.

Mr. GEORGE WILKINSON demonstrated on the epidiascope an apparatus illustrating the resonance theory of hearing as applied to the cochlea.

Dr. GODFREY CARTER, the retiring President, congratulated the society on the valuable series of papers presented to it in the session now brought to a close.

PERHALATION METHOD OF ETHER ADMINISTRATION.

A MEETING of the Scottish Society of Anaesthetists was held on April 15th in the rooms of the Medico-Chirurgical Society, Aberdeen, with the President, Dr. JOHNSTON, in the chair, when Dr. OGSTON read a paper entitled "Notes on the administration of ether by the perhalation method." He pointed out that this system now replaced chloroform as the stock method for abdominal surgery, and that the standard which it had to meet was therefore a high one in respect of abdominal relaxation and quiet respiration. If the points referred to later were attended to there was no difficulty in reaching the required standard. To be effective as an inducing agent as much as 18 per cent. or more of ether vapour was necessary, whereas when given on the ordinary mask Hewitt and Syme had shown that not more than 14 per cent. was available. As much, or possibly more, ether was vaporized by expiration as by inspiration. By a simple device Dr. Ogston demonstrated to the audience that ether vapour did not rise in an appreciable quantity more than half an inch above the mask, whereas it was easily detected, by touch, smell, and sight, many inches below it. The apparatus used by him provided for the conservation of this ether vapour of expiration. It consisted of an ordinary Bellamy Gardner mask, upon which was erected a secondary frame composed of six uprights,

joined at their distal extremities by a metal ring; a towel pinned round the uprights furnished a cylinder, at the bottom of which the ether vapour collected. The aperture was as wide at the top as at the bottom, so that all the gauze was available for the reception of drops of ether. Personally, he preferred to keep the head in the mesial position even during deep anaesthesia, so that the apparatus was suitable both for induction and maintenance. Some twelve to sixteen layers of gauze were used on the mask itself and great care exercised as to the fit between face and facepiece. Another point on which he laid great emphasis was the even distribution of the ether. If all drops fell in one spot freezing took place, and the ether percentage was lowered; dropping must, of course, be continuous. In favourable cases induction took six to ten minutes. With the use of the cylinder the temperature in front of the mask did not fall below 50° or 60°. After anaesthesia is established and less ether is being used the temperature within the cylinder rises to 70° or over. The economy of ether was such that overdosage was quite possible. No doubt there was also some concentration of carbon dioxide, but rarely of such a degree as to do any harm. Occasionally one saw shallow breathing and duskiness which might be attributable to this cause. Such symptoms passed away at once if the mask was withdrawn for a few respirations and was turned upside down to empty the gaseous contents of the cylinder. A free airway was essential. He believed greatly in Hewitt's airway; when necessary he even put a gag or prop between the teeth before beginning induction. He believed in going very slowly at first; this really saves time in the end, as it caused less mucous and respiratory embarrassment. In order to secure this result he often started with the apparatus upside down, having the aperture of the cone adapted to the face and dropping the ether upon the inside of the mask. Before the operation was started he abolished the corneal reflex and obtained medium dilatation of the pupils. Later, he allowed the corneal reflex to reappear. He regarded sighing as rather a favourable sign, showing sufficiently deep anaesthesia; moaning indicated too deep a level of anaesthesia.

Dr. J. S. Ross thought the method really provided for induction of even powerful subjects by ether alone. Frankly, he personally used a little chloroform—not more than a drachm—during the induction stage, but the lecturer evidently did not find this necessary.

Dr. LAMB thought induction by ether alone was rather slow, and would like to hear some more details of Dr. Ogston's experiences in this respect. He did not agree with Dr. Ogston as to the meaning of moaning, which he considered indicated a light, not a deep anaesthesia.

Dr. BARRAS doubted whether corneal reflex was very valuable if morphine had been given. Dr. FAIRLIE preferred the lateral posture for the head when deep anaesthesia had been obtained; otherwise he agreed with most of Dr. Ogston's views.

Dr. FREW was interested in the simple design of Dr. Ogston's apparatus. He had tried a towel in front of the mask to condense the vapour, but without much success, and had adopted the apparatus, described some time ago in the BRITISH MEDICAL JOURNAL by Picton, which had the advantage of maintaining a somewhat higher temperature of the inspired air than did the ordinary method.

Mr. G. H. COLT, speaking as a visitor, wished to thank the society for inviting a surgeon to attend, a course which might be to the mutual advantage of anaesthetist and surgeon. He drew attention to the difference between open ether given by the expert to a prepared patient, and by the novice to a patient who had not had morphine and atropine; the latter condition was one of the drawbacks of the method in out-patient practice, notably in the reduction of fractures. The expert anaesthetist rendered the performance of difficult operations comparatively easy. Some form of muscle tonometer might be an advantage during the different stages of an operation, especially for teaching purposes.

The PRESIDENT thanked Dr. Ogston for his valuable contribution and gave personal testimony to the great success of the method. He believed that to those who had not made use of some such assistance to the ordinary open ether method, the facility with which Dr. Ogston induced by the use of his method would be a great surprise.

Dr. OGSTON, in replying to questions, stated that he used 1½ oz. to 2 oz. of ether for the induction and completed the first half-hour, as a rule, by 4 oz., including the induction stage. Those quantities were for average cases. In debilitated cases 1 oz. may suffice for induction, while in robust alcoholics as much as 2 or 3 oz. may be required.

Nitrous Oxide and Oxygen.

Dr. HOLME HENDERSON read a paper entitled "Some considerations on gas and oxygen." He said that this combination had as yet been little used for prolonged anaesthesia on this side of the Atlantic, and few of us had sufficiently long experience to enable us to speak didactically. From America, however, we had such statistics as those of Lakeside Hospital, Cleveland, in which Teter and his assistants had given 34,964 administrations without a fatality. Statistics, as a rule, had value to a coroner only; they left out the personal factor. The general public believed that of all anaesthetics nitrous oxide and oxygen had the smallest mortality, but this belief was not necessarily correct. As regards its administration, there could be no question but that long administration with the older apparatus often led to very alarming symptoms, such as pallor and faint breathing, which might or might not be due to the conditions now recognized as acapnia. The modern apparatus provided for complete control of the flow of gases and of their relative proportions, and also for rebreathing. This had made an immense difference, and by the use of such plant beautiful results could be obtained. There was perhaps in America, however, a tendency to place too much reliance upon mere mechanical perfection. One read accounts of a single lady, not possessed of a medical qualification, looking after six patients to whose faces the mask had been attached, but one must receive such stories with caution. At the same time he did not wish to throw any doubt upon the accuracy of American figures. Evidently their results were obtained with a degree of brilliance which did not appear to be easily attained in this country. One could only suppose that there were some factors different in the two countries. He thought the American subject was more open to the power of suggestion, and possibly less addicted to the use of alcohol, which made him a better subject for anaesthesia. He thought we should be wise not to spoil the case for nitrous oxide and oxygen by overrating its claims or underestimating its possible dangers. The main object of his paper was to urge members of the society to record their own impressions of the method, and in doing so to indicate their views upon the most appropriate drugs and dosage for preliminary medication, and the combination of other adjuvant anaesthetics during the operation. Such aids to nitrous oxide and oxygen were undoubtedly necessary, as the anaesthesia by the gases themselves was of a very light degree. No account of administrations was of any value unless these helps were clearly recorded. So far as the general public was concerned, he thought they should be made to grasp clearly this point, that while nitrous oxide and oxygen was the safest of all anaesthetics in the hands of an expert in the technique of its administration, it was perhaps the most unsafe in the hands of the inexperienced, and it should, therefore, never be administered except by an anaesthetist specially trained in its use. It was interesting to learn that the first gas-oxygen administrator at the Lakeside Hospital had to become proficient in anaesthetizing dogs by the method before being allowed to use it on his fellow men.

Coming to his own personal experience, he found that it was no use working with anything but a first-class machine, which gave real control of the two gases and of any auxiliary anaesthetics. The one that he used was as versatile as any: it was the Gallagher Model, U.S. Army. Previously, he used a small model U.S.A. Gwathmey machine, and though quite pleased with it he saw that the other had some additional advantages. He was sure that the time was not far off when the anaesthetist dare not run the risk of having no means to give gas-oxygen when called on, and he thought, therefore, it was wise to have a spare apparatus in reserve. It was necessary to understand every detail of the mechanism one was using. As to the class of case, he had used it for all branches of surgery, even in eye work—extractions, iridectomies, etc.—and he had found it very satisfactory. In abdominal work, undoubtedly, it was the severely toxic cases in which the advantages of the method were most marked. From experience in such difficult cases as gall-bladder operations and removal of the prostate, he had formed the conclusion that any case might be done under gas oxygen if it were absolutely necessary.

The PRESIDENT thanked Dr. Henderson for a most interesting paper, and said that he considered the time at the disposal of the meeting was too brief for an adequate discussion. It was therefore resolved that a summary of the paper should be circulated to the members and the discussion put upon the agenda for the autumn meeting.

Reviews.

INJURIES OF THE HEAD.

THE death of the author unhappily coincided with the publication of Professor DURET'S life-work on cranio-cerebral injuries. For fifty years Professor Duret had proceeded with his investigations, amassing clinical material, performing experiments, and publishing from time to time papers by his own hand or by those of his assistants. The final reviewing of a life-work of acute observation was greatly embarrassed by the capture of Lille and the cutting off of the author from the civilized world. In spite of this handicap, which the author did not unduly stress, he succeeded in producing one of the most remarkable works of our time. His book, *Traumatismes cranio-cérébraux*,[1] consists of two volumes, the first of which has already been noticed in our columns (June 19th, 1920, p. 830); it was concerned with the mechanism of cranial fractures, with their anatomy, and their gross results.

The second volume is divided into two parts. The first deals with cerebro-spinal fluid in reference to cerebral injury, the second with the pathogenesis, diagnosis, and treatment of cerebral commotion. At first glance it might be thought that the part played by the cerebro-spinal fluid in injuries to the head is a subject briefly to be dismissed. The influence of this fluid on cerebral injuries is, however, one of the late Professor Duret's most notable discoveries. He regards cerebro-spinal shock as the most important factor in cerebral commotion; he believes that it is through the agency of this fluid that the forces of injury applied, say, to the vertex are transported to the vital structures in the posterior cranial fossa. His experiments of 1878 on dogs led him to this conclusion, for he found it possible to produce severe lesions, from punctate haemorrhage to everted bursts of the floor of the fourth ventricle, by injuries to the top of the animal's head. These posterior fossa lesions, which Kocher classified as the "Duret'schen Lasions," he was later able to find in man. Several chromogravure plates illustrate these points. It is easy to recognize here the contrecoup injuries of so many authors. Duret believed that the cerebro-spinal fluid had an important regulating action within the skull, and there is much to be said for this view.

The subject of cerebral compression receives long and skilful attention at his hand. Duret favoured the theory of a vasomotor sympathetic action on the cerebral vessels, but was unable to produce incontrovertible evidence on this point. The work of Kocher, Cushing, and Leonard Hill receives adequate exposition, as, indeed, does that of most authorities. Innumerable histories, not only of the author's own cases, but very largely those gathered from the world's literature, are given, together with a profusion of illustrations of the injuries found at operation, or more often at necropsy.

The diagnosis, prognosis, and treatment of commotion in its various forms is thoroughly discussed. Duret believed in lumbar puncture, not only to assist in diagnosis and to relieve hypertension, but to lower the intracranial toxaemia of haemic origin which he thought played a part. He also believed in the value of ice applied to the head, a custom which was a little time ago considered old-fashioned, but is likely to be revived. His sections on the operative treatment of cranial injuries are very sound indeed, and he did well to call attention to the fact that haemorrhages into the white matter and into the ventricles may be traumatic in origin. Duret was no doubt right in thinking that concussion in men is the resultant of forces acting on many structures, diverse, but infinitely valuable in function. Space and time have had no curtailing influence, and the views of writers are given fully, together with their most important diagrams. This greatly enhances the value of the work for purposes of reference, a value which is greatly diminished by the absence of an index. The analysis given beneath each chapter heading and the "Table des matières" are, of course, totally inadequate advertisements of one's wares. It is a thousand pities that we have nothing more orderly than these, because these volumes are encyclopaedic. To them surgeons are going to turn as to a treasure house for many years to come. The paths to this house are obscured by weeds.

[1] *Traumatismes cranio-cérébraux.* By Professor H. Duret of Lille. Paris: Félix Alcan. Tome II, Parts I and II. (Roy. 8vo, pp. 1357; 272 figures. Fr. 50 the two vols.)

FOTHERGILL'S "MIDWIFERY."

THE appearance of the fifth edition of Professor W. E. FOTHERGILL'S *Manual of Midwifery*[2] carries the reviewer back to the end of last century when, as a student, he studied the first edition with the aid of tobacco and the midnight oil. The book was then regarded as being an epitome of the late Sir A. R. Simpson's teaching, and for that reason, amongst others, was popular in Edinburgh at that date. Its essential excellence has, however, made it popular in other schools as well, and it is gratifying to see that it retains so much vitality. The book is still the same in all essential characters, and the reviewer cannot wish more for it than that the present generation of students may find it as satisfactory as did their predecessors. There are, however, nowadays other and newer books competing for the favour of the student of midwifery, and one cannot but feel that Professor Fothergill's book might have been improved by an attempt to present the subject on rather more modern lines. In his preface Professor Fothergill says that in revising the book he has been "impressed by the trifling nature of the advances made in the ancient art of midwifery." The reviewer confesses to feeling similarly impressed with the trifling nature of the advances and changes made in this book since the appearance of the first edition in 1896. Be it observed that no criticism is offered as to the soundness or modernity of the teaching (except as indicated below), but it smacks a little of the archaic to see the old terms "reflexa" and "serotina" still applied to the decidua; is it not waste of space in a student's textbook to explain the misconception which led to the establishment of that nomenclature by John and William Hunter? This is only one example of what is meant. Another point which the reviewer noticed is that occasionally the writer's meaning is obscured by tautology. What, for example, is to be made of the following: "It is desirable to measure the patient's waist over the skin. This measurement is usually less than the measurement taken over the clothes at the same place. The measurement over the clothes should really be a little larger than that taken over the skin"? Statements like these make one feel that the revision of the book has been somewhat perfunctory.

Professor Fothergill says that "the spread of Caesarean section has been accompanied by some loss of interest in the abnormalities of the bony pelvis, the mechanisms characteristic of them, and the 'obstetric' methods of dealing with them." This, if true—and we fear that to some extent it is true—is deplorable; it is disappointing, therefore, to find Professor Fothergill dismissing the important subjects of the mechanism and treatment of labour in a flat pelvis in rather less than two pages. Furthermore, he recommends the early application of forceps after the dilatation of the cervix is complete, "as this saves exhaustion to the mother and risk to the child, and causes no danger if extraction is not hurried." There is no suggestion in this of the enormous value of giving the head plenty of time to mould. We wonder if this represents the deliberate teaching of the Manchester school of obstetrics. It is true that the recent report of St. Mary's Hospital presented positively startling statistics in regard to the treatment of contracted pelvis, the great majority being treated by Caesarean section, while the forceps operation had been relegated to a position of very diminished importance. Unfortunately, the data in that report were hardly full enough to enable a proper judgement to be formed, and one must recognize the great frequency of bad degrees of rickets in Manchester. But it is just possible that this enthusiasm for Caesarean section may prove to be a passing phase, and, if so, one feels doubtful as to the wisdom of inculcating it as accepted teaching in a book of this sort.

A TEXTBOOK OF PATHOLOGY.

THE seventh edition of the *Textbook of Pathology*,[3] by Drs. ALFRED STENGEL and HERBERT FOX of Philadelphia, has been extensively revised: new sections have been added and some sections have been rewritten. The book, which is of over 1100 pages, endeavours to be comprehensive, and deals not only with the morbid anatomy and histology of disease, but also includes chapters on bacteria, methods of transmission of disease, and animal parasites. It also includes the discussion

[2] *Manual of Midwifery.* By W. E. Fothergill, M.A., B.Sc., M.D., Professor of Obstetrics and Gynaecology, Victoria University of Manchester. Fifth edition. Edinburgh: W. Green and Son, Ltd. 1922. (Cr. 8vo, pp. 488; 103 figures, one double coloured plate. 10s. net.)

[3] *A Textbook of Pathology.* By Alfred Stengel, M.D., Sc.D., and Herbert Fox, M.D. Seventh edition, reset. Philadelphia and London: W. B. Saunders Company, Ltd. 1921. (Roy. 8vo, pp. 1111; 509 figures, 15 plates. 42s. net.)

of the anatomical lesions associated with diseases of the nervous system, the eye, the skin, and the ear. Gout, diabetes, and acidosis are only lightly touched upon in a short chapter headed "Disorders of nutrition and metabolism," in which also "fever," "beri-beri," and "pellagra" are included. The two latter conditions are stated to be due to the absence of substances to which Funk has given the name "vitamins." This, except for one line at the beginning of the chapter, is the only reference made to substances which recent investigations have shown possess considerable importance. They are not even mentioned in discussing the etiology of rickets. The book, however, hardly touches throughout on the chemical side of disease.

One of the sections rewritten is that on nephritis; the classification adopted is, it is stated, based on clinical grounds, but the account leaves the reader with a rather bewildered impression. A short account of modern views on the anatomy and physiology of the organ is given, in which the authors state that the glomerulus secretes a dilute plasma, and that the function of the tubules is reabsorption. The description leaves the question of any secretory activity of the tubular epithelium entirely indefinite; in fact, it is hardly mentioned. Great faith appears to be placed in the phenolsulphonephthalein test to determine whether a renal lesion is present or not. The basis of classification is that tubular changes are characterized by pronounced albuminuria, low blood pressure, and oedema, which may become chronic and form the large white kidney, while glomerular changes are characterized by little albumin, high blood pressure, and uraemia. This position is a difficult one from which to form an understandable classification, for cases of nephritis at times are met with which can be observed to pass from one group to the other.

The section on influenza also has been rewritten. Pfeiffer's bacillus is considered, on present evidence, to be the most likely cause of the infection. The difficulties attending the culture of this micro-organism are rightly insisted on as an important factor in the value of evidence of its prevalence in any particular outbreak. Great stress is laid upon the bacillus as the prevalent organism in a type of chronic bronchitis which tends to form bronchiectatic cavities; this contention is based on work done by the authors. They also maintain that a vaccine of the organism has curative value in chronic cases of this nature. They, however, allow that such lung conditions are almost always accompanied by other infective organisms, so that the specificity of the relation between Pfeiffer's bacillus and the lesions is not proved. They state that influenza is a "toxaemia" in which the "virus" spreads rapidly through the body, and not a simple upper respiratory tract infection; they describe lesions in many other parts of the body, but fail to explain why the usual view that the "toxaemia" or general clinical reaction is due to an infection of the upper respiratory tract as primary cause does not afford a satisfactory explanation of the pathology of the condition. It is also not clear what is implied in the use of the term "virus" in such a condition, whether it refers to the organism itself or its toxic products; a search in Chapter VIII, on "Bacteria, their nature and action," does not remove the difficulty. In this chapter Ehrlich's side-chain theory is described at length; it is held to explain the phenomena of immunity; but this is a position difficult to maintain at the present day.

From the above examples it will be seen that controversial matter is easy to find in the volume, and that the views given are not always easy to follow or necessarily those most widely held by pathologists in general.

The book is profusely illustrated, but many of the illustrations are far from satisfactory; certain of the photographic reproductions are only decipherable with much difficulty, and almost all the illustrations suffer from the absence of any detailed description of what they represent, or any lettering to indicate the important points intended to be shown. One feature of very doubtful value is the modification of illustrations from other textbooks, especially when such illustrations were originally drawn from actual specimens. The absence of any form of authors' index or any system of references diminishes the value of the book as a work of reference. There is, however, a fairly complete subject index which enables the authors' views to be arrived at. Regarded as a student's textbook, the attempt to include an account, often involving much detail, of all sides of pathology in a single volume must lead to the inclusion of a large number of statements open to criticism, and to a volume somewhat indigestible for the average reader.

PUBLIC HEALTH CHEMICAL ANALYSIS.

THERE are already so many standard works on chemical analysis suitable to the needs of public health officers that there hardly seems room for another volume on the subject unless it has an outstanding individuality, and this cannot be said to characterize *Public Health Chemical Analysis*,[4] by FREDERICK and FORSTER. It is not quite clear for whom the work is intended: if for public analysts, it does not contain enough information; and if for medical officers of health, who do not do much actual analysis, though they are expected to be able to interpret results, it is not sufficiently explanatory and presumes more knowledge in the reader than most of them possess. Almost on the first page the authors, when describing the manner of using the chemical balance, say, "the balance must be at rest during the moving of weights or objects on the pans." This would be understood by a trained student, but one who is untrained should be told that "the balance beam must be removed from the agate knife edges during the moving of weights," etc.

The best portion of the book is that which deals with the collection of samples of air and of water, and in this respect medical officers of health may find it of value. Haldane's apparatus for the estimation of carbon dioxide in air is recommended in preference to Pettenkofer's or the Lunge-Zeckendorf method. The description of Haldane's apparatus is clear and concise. The directions for the collection of water samples are those which are usually sent out from public health laboratories, and the particulars it is recommended the collector should be asked to submit are fairly complete. Half a dozen pages are devoted to sewage, trade waste, and effluents, and there are chapters dealing with milk, butter, bread, and other foodstuffs. The illustrations are carefully selected, and help in elucidating the text, while the tables and formulae given in the appendix will no doubt be found useful.

A NEW REACTION FOR SYPHILIS.

SINCE the introduction of the Wassermann reaction for the detection of syphilis many other so-called colloidal reactions have been introduced, with special reference to the examination of the cerebro-spinal fluid in cases in which syphilitic disease is suspected in the central nervous system. Of these the colloidal gold reaction of Lange, the gum-mastic test of Emmanuel, and the Berlin-blue test (Kirchberg) are the best known. These are described with some detail in a book[5] which has newly appeared in Paris. The imperfections of various methods are pointed out in it, but the main purpose of the authors, MM. GUILLAIN, LAROCHE, and LECHELLE, is to urge the importance and infallibility of their own similar test with colloidal benzoin. The details for carrying it out and evidence of its value clinically are set out at length. If it should prove to be what they state, observers will be provided with a simple and trustworthy means of diagnosis. In this country no doubt a bevy of investigators would have been content to publish their results and anticipations in a paper read before some medical society, and would hardly have considered a whole book (albeit not a big one) necessary for the purpose.

NOTES ON BOOKS.

IN *The Clinical Examination of Surgical Cases*[6] Mr. J. RENFREW WHITE, of Dunedin, New Zealand, outlines in tabular form a series of systematic methods for the examination of different types of surgical cases. The book is difficult and depressing, if not impossible, to read—in the study—but it will be of value to the medical student at the bedside by helping him to train himself in habits of careful and systematic examination of cases and case-taking. As hospital records suffer greatly from the lack of uniformity in the methods by which they are kept such a volume as this might also be of considerable value in serving as a basis for the systematization of case records. The author gives sixty-seven different tables of methods of investigation in different types of surgical cases, based upon his simple general method. The volume may be commended to teachers of clinical surgery.

[4] *Public Health Chemical Analysis.* By Robert C. Frederick and Aquila Forster, Ph.D., M.Sc., A.I.C. London: Constable and Co., Ltd. (Demy 8vo, pp. 305; 60 figures. 21s. net.)

[5] *La réaction du benjoin colloïdal et les réactions colloïdales du liquide céphalo-rachidien.* By Georges Guillain, Guy Laroche, and P. Lechelle. Paris: Masson et Cie. 1922. (Med. 8vo, pp. 146; 28 figures, 4 plates. Fr.12 net.)

[6] *The Clinical Examination of Surgical Cases: A Handbook for the Use of Students and Practitioners.* By J. Renfrew White, M.B., F.R.C.S.Eng. Dunedin: J. Wilkie and Co. 1922. (Cr. 8vo, pp. 128.)

NATIONAL COUNCIL FOR MENTAL HYGIENE.

A MEETING was held at the house of the Royal Society of Medicine on May 4th in connexion with the formation of a National Council for Mental Hygiene. Sir COURTAULD THOMSON, K.B.E., C.B., was in the chair, and there was a very large attendance.

The CHAIRMAN said that the platform was fortunate in having upon it so able an exponent of the views of the promoters of the Council as the President of the Royal College of Physicians (Sir Humphry Rolleston). A most sympathetic message had been received from the National Council of Mental Hygiene of America, and he trusted one of the results of that day's proceedings would be that Great Britain for the first time would be able to take her proper place in the international conferences on this subject. The Minister of Health had assured him of his sympathy and support.

Aims of the Movement.

The objects of the National Council, continued Sir Courtauld Thomson, were for the benefit of the whole country; all the skill, devotion, and energy of the medical profession would be of little avail without the whole-hearted support of the general body of the public. Laymen on the Council might relieve their medical and scientific colleagues of much of the work in connexion with organization and propaganda. He made an earnest appeal for the support of laymen, to whom the institution of this Council offered an opportunity for co-operating with the medical profession in helping forward the health and mental soundness of the nation.

Sir HUMPHRY ROLLESTON then explained in more detail the aims of the movement. After a reference to the present-day emphasis upon preventive medicine and to the amount of careful study which was being directed to the detection of the early symptoms of functional disorder, he pointed out the difference between bodily and nervous derangement. The man whose lungs or stomach were not up to the mark was still able to take his part in the work of the world, whereas the man who suffered from mental disorder, however slight, was to a much greater extent incapacitated. It was true that much had already been done in the direction of study of mental hygiene, but as compared with America, where they seemed to have a special genius for combining for action, the workers in this country on the subject had been less successful. The American Council of Mental Hygiene, founded in 1908, had done much good work; in 1918 a similar council was started in Canada, and in December, 1920, the French League of Mental Hygiene was inaugurated. It was important that a National Council on the same lines should be called into being in this country to confer with the National Councils, pool and disseminate the information thus obtained. In the work of preserving healthy minds in healthy bodies there was a crying need for helpers in other branches than those of medicine. The objects of the proposed British National Council would include organized co-operation with societies and associations engaged in promoting the study of mental disorders, the welfare of the insane, the various aspects of mental deficiency, and the problems of industrial psychology. The etiology of minor mental disorders, which were multiple and included heredity, environment, the influence of alcohol, syphilis, and the poisons met with in trades, such as lead, would be studied. The somewhat neglected subject of mental hygiene would be advocated for a more prominent place in the medical curriculum. Assistance would be given towards the establishment of psychological clinics at the general hospitals for the treatment of early cases of mental and nervous disorders. A judicious propaganda would be carried out, putting forward the principles underlying mental health and disease, so that parents and teachers should realize that in their hands lay the making or marring of their children's and pupils' lives; and conferences would be held with the National Councils of other nations engaged on the same kinds of study.

Appointment of Council.

It was then unanimously agreed that a National Council for Mental Hygiene be formed, and on the proposition of Sir FREDERICK MOTT, seconded by Dr. FARQUHAR BUZZARD, Sir Courtauld Thomson was elected President. Lord SOUTHBOROUGH proposed, and Lady DARWIN seconded, that the following should comprise the provisional committee, with authority to act for one year:

Sir Humphry Rolleston, President of the Royal College of Physicians of London; Sir Charles Sherrington, President of the Royal Society; Sir John Goodwin, Director-General, A.M.S.; Sir George Newman, Chief Medical Officer, Ministry of Health; Sir Walter Fletcher, F.R.S., Secretary of the Medical Research Council; Dr. C. Hubert Bond, President of the British Medico-Psychological Association; Dr. Bedford Pierce, President of the Section of Psychiatry of the Royal Society of Medicine; Professor George Robertson, President-elect of the British Medico-Psychological Association; Dr. C. S. Myers, F.R.S., Director of the National Institute of Industrial Psychology; Sir Norman Moore, Dr. G. Ainsworth, Dr. Helen Boyle, Dr. Edwin Bramwell, Dr. Farquhar Buzzard, Sir Maurice Craig, Lord Dawson of Penn, Sir Bryan Donkin, Dr. Elliot Smith, F.R.S., Dr. Edwin Goodall, Dr. Henry Head, F.R.S., Dr. Crichton Miller, Sir Frederick Mott, F.R.S., Dr. W. H. R. Rivers, F.R.S., Dr. T. A. Ross, Dr. Tredgold, Dr. W. Worth.

Dr. H. B. BRACKENBURY doubted whether it was a wise thing to give the Committee power for as long as twelve months. He thought it very important also that the Council should have a representative character and not merely consist of eminent persons: societies which had been doing very good work along similar lines ought to be represented. Another speaker supported Dr. Brackenbury, and stated that too many of those proposed as members of the Committee had been responsible for what he termed "the bad old days." The atmosphere of the asylum was contrary to all their ideas of mental hygiene, and he would not have the Committee include any ex-superintendents of asylums.

The CHAIRMAN said that the names suggested were those mentioned in his recently published letter (BRITISH MEDICAL JOURNAL, April 1st, p. 538). He would be very glad to receive suggested names of persons whom the Committee might co-opt, but that meeting was not the proper place in which to discuss the merits of any particular individual. He hoped that there would be no hostile amendment. Dr. BRACKENBURY said that he had not the slightest intention of being hostile. The name he had in mind was that of Sir Leslie Scott, and he urged that the Solicitor-General should be put on the Committee straight away. This amendment was accepted, and it was also agreed that the Committee should be elected for six months. The CHAIRMAN remarked that the constitution of the Council had not yet been drawn up, but this would be done by an eminent firm of solicitors.

The Study of Mental Hygiene.

Dr. HENRY HEAD then delivered an address, in which he said that mental hygiene was the application to the life of the community of highly specialized scientific work, the results of which belonged to the most diverse categories of knowledge, and were gathered by workers in widely different fields. He pleaded for the co-ordination of the results of these multifarious activities in so far as they had a bearing on the mental health of the community. By mental hygiene was meant the maintenance of that state of health in which the human being could respond normally to the calls made upon him by daily life. It was as important to every man as the sanitation of his home. Every year we were learning more and more how inextricably mind and body were intermingled, even in the simplest mechanical acts. The evil effect of repression was one of the most important therapeutic lessons learned from the war. When he (the speaker) was working for the Royal Air Force, a pilot would be sent for examination because he was making bad landings, and would complain that although he always carried out the manœuvre in the same way, it no longer came off with certainty: something had happened to destroy his skill. On closer investigation the cause of this loss of mechanical aptitude would be found on the physical or on the mental side: either he had some definite bodily ailment or was suffering from one of the many forms of anxiety. Moreover, this want of skill was usually accompanied by disturbed sleep and unpleasant dreams, which revealed the anxieties and fears so commonly accompanying what seemed to be a purely physical disturbance. The hard and fast line so commonly drawn between organic and functional conditions was grossly fallacious. No structural disease was free from its mental concomitants, and every mental state had its bodily equivalent. So-called "nerves" produced more individual and corporate misery than cancer. The condition was an evidence that something was wrong beneath the surface of the mental life, for subconscious processes were the link between the body and the mind. Dr. Head went on to say that had a knowledge of mental hygiene been more prevalent we should have been spared the crazy exhibition of suggestion to which the public had recently been exposed. We were advised, when the drain was obstructed, not to clear the effluent, but to say "Ça passe," in the hope that thereby the noxious effluvia would be dissipated. How widely the study of

mental hygiene entered into the life of the community was shown by recent research on industrial fatigue. Many years ago it was discovered, mainly by work in America, that the output in certain laborious occupations could be increased by eliminating unnecessary movements. This study had already grown enormously, but the aim of the investigator had changed. He was concerned no longer with the commercial aspect, but was now attempting to increase the efficiency of the worker by removing unnecessary causes of fatigue, and some striking results had been obtained, which Dr. Head described in detail. He considered that there was little doubt that much industrial unrest was due to the worry and fatigue induced by unsatisfactory working conditions, and while the State insisted on physical hygiene of the strictest order, they that day were pleading for an equivalent mental hygiene. True education was also, after all, but a branch of mental hygiene. If mental hygiene was of such universal importance in the conduct of daily life, how much more must knowledge of its laws be imperative for all who attempted to give advice in disease. Every medical man should be aware of the morbid mental states which were liable to accompany any organic disease or disturbance of function. He should be able at once to trace to their sources those ideas and feelings which occurred in persons who were not insane. Nurses also should have a knowledge of morbid psychology. Another class for whom knowledge of mental hygiene was profoundly important was ministers of religion, for depression in an early stage not uncommonly assumed a religious form. "The known is no longer terrible," said Dr. Head in conclusion, "but we dread and shudder before what we do not understand, particularly if it is something mental. We accept a physical disability, like a broken arm or an injured knee, and take our measures accordingly, but we are paralysed before things of the mind. Complete understanding abolishes fear and restores freedom of action. In the name of mental freedom I plead with you for the wide distribution of that most potent knowledge we know as mental hygiene."

Sir LESLIE SCOTT, the Solicitor-General, said that bad cases of mental deficiency were very easy to deal with. Institutional accommodation was effective and was the only satisfactory treatment. The difficult cases were those on the border line, such as cases in which conduct bordered on the criminal, and it was most essential here that the different bodies dealing with mental hygiene should be brought into close touch by some unifying organization. Persons who committed crimes because they were wrong mentally should be dealt with medically, and those who had to administer criminal justice should have the assistance of experts in such matters. There was in the public mind a tendency to fear that the medical officers of mental hospitals were overriding the rights of the lay public. That was a bogy; yet the fact that such a tendency existed should make it necessary to strengthen the lay side of such a council as was being brought into existence. If the doctors would welcome the co-operation of laymen and laywomen of sense it would have a great influence in bringing about a reaction of public feeling.

Sir JOHN GOODWIN spoke briefly of the matter from the point of view of the army. He insisted upon two points: the earliest possible detection and treatment of any mental aberration, and the careful and thorough treatment during convalescence of every case that had been through mental illness in order that recovery might be permanent and complete.

Sir MAURICE CRAIG said that for as long as he could remember this branch of medicine had worked under two important disabilities—the legal restrictions surrounding it, and ignorance on the part of the public as to what was meant by "mental disorder." The term "mental" always conveyed something uncanny, unhappy, and formidable to the lay mind. The wrong conceptions which were popular with regard to mental disorder must be eradicated, and the barrier which separated mind from body removed. Instruction would be one of the aims of this new council. It was well known that a very large amount of mental disorder could be prevented. It was bad medicine and poor economy to build vast institutions for the care of the mentally afflicted, when more money, time, and thought might be spent in preventing the bad conditions which caused the trouble. The public had awakened only recently to the fact that there were no real facilities for dealing with functional nervous disorders in this country at all, with the exception of such an institution as the Lady Chichester Hospital, whose promoters deserved all credit. If anyone asked why one more council should be added to the many bodies already in existence, his reply would be that it ought to have made its appearance long since.

The proceedings then terminated. The address of the honorary secretary of the National Council is 51, Green Street, W.1.

NOTIFICATION OF VENEREAL DISEASE.

CONFERENCE AT THE LONDON GUILDHALL.

AT the request of the Corporation of London, a conference was called at the Guildhall on May 3rd by the National Council for Combating Venereal Diseases to consider how infected persons could best be retained under treatment until free from infection. Lord GORELL, and at a later stage Sir MALCOLM MORRIS, presided over the conference, which was attended by a large number of medical officers of clinics and representatives of public health committees from various parts of the country.

The LORD MAYOR OF LONDON, in welcoming the members, said that the idea of a conference arose out of the experience of the Sanitary Committee of the Corporation that the results of the arrangements for dealing with venereal disease left much to be desired. The expenditure was £3,000 a year, and last year, out of 1,391 people under treatment, 831 left off attending the clinic while still in an infective condition.

For and Against Legislative Measures.

The proposal for fresh legislation was put forward by Dr. C. J. MACALISTER, who thought that some public measures must be taken to impress upon the people the fact that the authorities took a really serious view of the effects which might follow promiscuity. Public opinion was prepared for legislation, and much less importance might now be attached to secrecy than at the commencement of the antivenereal campaign. Control, both for the sake of the individual concerned and the community, should be exercised throughout the period of treatment. Legislation would necessarily be on the lines of notification. At present there was no obligation for the infected person either to be treated or to remain under treatment. If these diseases were brought out into the open, classified among the other contagions, and dealt with accordingly, they would be brought into proper perspective in relation to morals. Notification itself would be a great means of public education; it need not involve aggressive action any more than in the case of other notifications.

Lady BARRETT pleaded for education rather than compulsion as a means of attaining continuity of treatment. Apparently the anxiety of those hitherto responsible for educative measures to assure the public of the possibility of cure by early treatment had led to a false sense of security. It was not understood that the quick cessation of symptoms in syphilis did not mean cure; that injections of salvarsan could not be relied upon without prolonged treament by mercury as well; and that when the reaction became negative it did not necessarily mean an absence of sequelae. The serious dangers of gonorrhoea, especially in women, also were not appreciated. Most medical men found less difficulty in ensuring continuity of treatment with private patients than with patients at clinics, probably because the former received a more complete education as to the necessity for continuance, and also because people valued more highly that for which they had to pay. It was impossible to compel people suffering from venereal disease to go to a doctor, for no patient could be expected to diagnose his own case, and presumably no one could be said to have venereal disease until he had been seen by a doctor. Again, any penalty for non-continuance could only follow upon evidence given by a doctor, and this would tend to uproot confidence between doctor and patient. If the threat of force influenced some patients to continue treatment, it would deter others from seeking treatment at all. It would also be extremely difficult to prosecute a person said to be suffering from syphilis for not attending until the completion of treatment if in the meantime he showed a negative reaction. She suggested that a more real conception of the nature of the disease should be placed before those attending the clinics; that treatment should be paid for by patients according to their ability; and that the medical profession should consider whether etiquette could not be relaxed so as to allow the doctor after due warning to take measures to prevent the marriage of an infected person.

Mr. CHARLES GIBBS said that the follow-up system had failed. At the London Lock Hospital 908 follow-up letters were written in 1921, but treatment was resumed in only 53 cases in consequence. If a patient received free treatment for a voluntarily contracted disease he incurred some liability to the State which treated him, and this liability could be crystallized into some measure of notification on cessation of treatment. Such notification would involve a report to the medical officer of health, who would be given powers to warn a patient that if he did not continue treatment he would be ordered by a competent legal authority to do so. The clinics as at present constituted were doing such excellent work that they could withstand the taking of such measures.

Dr. J. H. STOWERS said that the principle of notification as applied to zymotic and other infectious diseases had been too long established for its efficacy to be questioned. The time had arrived for a discussion of modified notification of venereal disease. Every possible assistance should be given by the members of the medical profession, but he did not think that they should be the prime movers in the matter.

Liverpool—West Australia—Ontario.

Dr. WILLIAM HANNA said that at the Liverpool clinics in 1921 the number of new cases was 4,800, and of attendances 73,000, but 50 per cent. of the patients gave up treatment before they were free from infection. The annual cost was approximately £16,000. The Liverpool City Council had approved certain proposals to ensure an adequate return on their money, and the proposals had also received the unanimous approval of the Merseyside boroughs.

These suggested regulations provided that every person suffering from any form of venereal disease, as soon as he was aware or had reason to believe that he was so suffering, should consult a medical adviser, and continue to attend his medical adviser until he was deemed free from infection. The doctor should direct the patient's attention to the infectious character of the disease and to the necessity for continuing treatment; he should also arrange for the transfer of the case to another medical adviser when the patient desired. If the patient discontinued treatment without adequate reason the doctor should report to the medical officer of health, who would make inquiries, and, unless satisfied, would cause information to be laid against the patient in a court of summary jurisdiction.

It was also laid down in these regulations that no person should knowingly or wilfully infect any other person, or do or permit any act likely to lead to such infection, the penalties being those provided in Section 1 (3) of the Public Health Act, 1896.

Dr. L. STEWART SANDEMAN said that the returns made by officers of clinics already amounted to a form of notification (of cases, not of names), and the notification of ophthalmia neonatorum had been compulsory for some time, and no exception had been taken. If the necessary powers to compel persons to continue treatment were granted to local health authorities it would no more lead to a breach of professional secrecy than the present system, except in the case of those who deliberately refused treatment after repeated warnings, and public opinion would agree that such persons had put themselves outside sympathetic consideration. She referred to the legislation in Western Australia, where notification was made compulsory, without publication of name and address, and any proceedings were heard *in camerâ*. She favoured a measure which would compel persons who knew or suspected that they were suffering from venereal disease to place themselves under treatment and to continue it until the infectious stage was passed, and would also call upon every medical practitioner to report cases treated by him. It must be a basic principle of any legislation to make it an offence knowingly to infect another person, or do or suffer any act likely to lead to infection of any other person; and legislation must be under public health, not police, administration.

Lieut.-Colonel T. F. RITCHIE (late director, Venereal Diseases Section, League of Red Cross Societies) gave an account of the system of notification and compulsory treatment adopted by the Provincial Government of Ontario.

This Canadian system provided for notification to the medical officer of health of every case of venereal disease as soon as it came under treatment; the notification was anonymous, serial numbers being used. Every person infected must seek treatment from a practitioner or apply to the medical officer of health, and was bound to continue treatment until pronounced non-infective. Should he fail to do so, he became liable to fine or imprisonment.

The medical officer of health was empowered to require any person who he had been credibly informed was infected with venereal disease, and had infected or was liable to infect other persons, to consult a medical man, and to produce a certificate that he was or was not so suffering. If such a certificate was not forthcoming the officer was empowered to order an examination of the person so reported, and, if considered necessary, the officer could order his detention and isolation.

The Ontario health officers were confident that their administration of the Act had not led to the concealment of the disease, nor to blackmail, nor to sex discrimination. But the adoption of compulsory measures would make it necessary to establish some standard of non-infectivity, particularly in regard to chronic gonorrhoea in women, and some standard minimum course of treatment and standard of cure in syphilis.

Mr. E. B. TURNER said that one of the objections put forward against notification was that it would drive people to have recourse to quacks or to forgo treatment altogether. But in places where a scheme of notification had been adopted this had not been the experience. From the replies to the questions sent out by the National Council it appeared that the very large majority of the persons consulted were in favour of some form of modified notification and continuous treatment. If compulsion was to be brought about it would be far better to do this by amending legislation than by an order of the Minister of Health.

General Discussion.

About twenty other speakers took part in the general discussion. The majority were in favour of some measure of notification. The feeling in favour of notification appeared to be less marked among the laymen who spoke than among the medical men. Dr. MARGARET RORKE (Blackfriars) said that, in spite of every effort at education and persuasion, a large number of patients at her clinic stopped short of treatment long before they were non-infective, and she believed the time had come for notification of such recalcitrants. Dr. LOUIS PARKES (M.O.H. Chelsea) pointed out that it would not be necessary to have fresh legislation, for the Ministry of Health was already empowered under the Public Health Acts to make the necessary regulations. Dr. DAVID NABARRO suggested that when the health authorities got hold of a syphilitic family by detecting a congenitally syphilitic child they should mark that family and endeavour to induce the mother, should she become pregnant again, to submit herself to treatment. Dr. CHARLES FRANKS (Durham) was inclined to think that legislation would not be beneficial; in any case 95 per cent. of the work must still be done by persuasion. Dr. HAMILTON WOOD (M.O.H. Warwickshire) thought that it would not be just to introduce legislation enforcing continuous treatment on those who had already voluntarily submitted to treatment without at the same time insisting upon all infected persons submitting themselves for treatment. Further, until facilities were complete, power should be given to county councils to adopt compulsory measures only in those areas where proper facilities were available.

Dr. MARY STURGE thought that before a definite decision was arrived at all possible evidence relating to the working of compulsory methods in other countries should be studied. There was still room for educational methods before resorting to compulsion. Dr. LYDIA HENRY (Blackburn) also was of opinion that the resources of education were not exhausted. Dr. WANSEY BAYLY (honorary secretary, Society for the Prevention of Venereal Disease), speaking personally, advocated a scheme which insisted on the immediate notification of primary and secondary syphilis to a special medical officer of health, and the infliction of heavy penalties for omission to notify. Dr. LETITIA FAIRFIELD reminded the conference of the greater reponsibility which would be thrown on social workers by the adoption of compulsory methods, for such workers must necessarily play an important part in the machinery necessary for carrying out any system of notification. She suggested that it might be advisable to make syphilis notifiable first, and when that had proved a success to go on to gonorrhoea.

Among the laymen who spoke, the MAYOR OF FULHAM was adverse from compulsory notification, which, he thought, would prevent persons from seeking medical assistance. A representative of the Association for Moral and Social Hygiene was also strongly opposed to legislation; and others spoke in the same sense. On the other hand, the Chairmen of the Paddington and the Battersea Propaganda Committees of the National Council favoured a modified scheme of notification, and the same view was urged by the Chairman of the Scottish Committee. In reply to a Scottish representative, who suggested that the National Council should form a Committee of Inquiry to go publicly into the question and see what measures could be taken to make notification effectual, Sir MALCOLM MORRIS said that this suggestion

would be considered, along with all the other suggestions which had been made at the conference.

No resolutions were submitted (other than votes of thanks), but it was understood that the conference came together for the expression of representative opinions to guide the National Council, and not for the passing of resolutions which might bind it. Certainly the suggestions put forward in a five hours' discussion were varied enough to give the National Council material for consideration. They ranged from proposals for the better education of the public, especially young women and expectant mothers, to a drastic measure, suggested by Dr. JAMES BUSFIELD, for preventing sexual intercourse with a person suffering from venereal disease.

The Lord Mayor and Dr. James Howarth, the medical officer of health for the City, were warmly thanked for the part they had taken in initiating the conference.

THE HUMAN NEO-CEREBELLUM.

PROFESSOR WINKLER'S LECTURE.

AN exchange lecture arranged by the University of London was delivered at the house of the Royal Society of Medicine on May 3rd by Dr. C. WINKLER, professor of clinical psychiatry in the University of Utrecht, who took for his subject the human neo-cerebellum. Sir FREDERICK MOTT, K.B.E., M.D., F.R.S., who took the chair, welcomed the lecturer as one whose neurological work was known all over the world, and who was director of an institution which could be regarded as a model of its kind.

The lecturer, who spoke in English, first paid a tribute to the British school of neurology and physiology for their work on the functions of the cerebellum, and especially to the memory of Hughlings Jackson, whose clear views on cerebellar functions came as a revelation to his contemporaries.

Professor Winkler introduced the subject of his lecture by an account of a case of olivo-ponto-cerebellar atrophy; the account was illustrated by lantern slides showing the condition found *post mortem*. The patient was a man who was under Professor Winkler's observation for five years, and died at the age of 59; one brother was similarly affected and died of the same disease.

When the patient was first seen the regular symptoms of cerebellar ataxy were present. At the age of 50 the patient had complained of dizziness on moving his head up and down, and at the age of 52 he had the staggering gait of a drunken man. In a very short time his speech became affected. At the age of 53 the patient presented the following characteristic signs and symptoms:

1. *Dysmetria* in all his movements was marked. He could not touch a defined spot with his blackened forefinger. He always pointed with his right forefinger above and to the right, and with the left above and to the left. In later years his movements deviated in other directions.
2. *Dyssynergia*.—On moving his trunk backward she fell with extended legs, never making flexion of the knees. Later all his movements became helpless. When put on his legs he moved the trunk to the left, and trampled desperately with his legs in the air.
3. The upper limbs were very atonic, and there was marked dysdiadokokinesis on both sides. It was difficult to estimate the tonus in the lower limbs. The knee and Achilles reflexes were exaggerated. Babinski's sign was never observed.
4. He spoke as if a potato were in his mouth, which made the words unintelligible, and a kind of gibberish.
5. Nystagmus was never observed.
6. He responded well to all tests of touch, pain, and temperature.
7. Vision was bad owing to strong myopia caused by staphyloma posticum without optic atrophy.
8. In the earlier stages hearing was good and the vestibular reflexes were normal. During the last year of his life he became deaf.

He died of pneumonia at the age of 59.

At the autopsy the brain weighed 1,380 grams—a good average weight. There was no affection of the vessels or membranes and nothing abnormal noticeable, except a small pons, a failure of prominence of the olivary bodies, and a smaller cerebellum than normal. Serial sections of the pons and medulla with the cerebellum were made and stained by the usual methods to show the conditions of the cells and fibres. A marked abiotrophy of the pontine, olivary, and arcuate nuclei was demonstrated in Nissl-stained sections; the other nuclei were intact. As a result of this neurone atrophy certain fibre systems were seen to be absent when compared with the normal.

These facts were demonstrated by means of Weigert-stained specimens projected by the lantern. Thus the inner portion of the inferior peduncle, which consists of fibres from the inferior olive and arcuate fibres, was sclerosed, and a very great falling out of fibres from the pons to the middle peduncle was obvious. Consequently, there was compared with the normal a great loss of fibres in the medullary rays of the cerebellum, but around the dentate nucleus the white matter was well stained, showing that the fibres entering this nucleus were not atrophied. The superior peduncle showed no degeneration. Whereas there was great loss of fibres in the plexus of the granule layer of all the lamellae, the fibres around the Purkinje cells showed a well-marked pericellular fibre plexus. The climbing fibres of the spinal tracts of Gowers and Flechsig have their terminal arborizations in this plexus.

Granted, then, that there was a primary systemic abiotrophy of neurones having a definite destination to the whole of the lateral lobes of the cerebellum, it must, the lecturer said, be asked, What was its functional and biological significance? The nature of the problem became more apparent when these facts were correlated with the results of experimental lesions in animals and embryological investigations on the development of the nervous system in the human subject.

Professor Winkler mentioned the effects of experimental removal of the cerebellum in animals, and showed sections in which the flocculus on one side had not been extirpated. He concluded from a study of Marchi preparations that as long as the layer of granules persisted there was no loss of cells in the nuclei connected with it. The argument he adduced was that the loss of cells in the pontine, olivary, and arcuate nuclei was not consecutive to an atrophied cerebellum in which the layer of granules showed only slight alterations, as was found in the case he described. His view was, therefore, that the cerebellar atrophy which he found was due to an atrophy of the medullary rays the result of a primary atrophy of the pontine, olivary, and arcuate nuclei. The lecturer then referred to the researches of Essick upon the human foetus of 2½ cm., in which he showed that two bands of neuroblasts (the bands of Essick) exist—the one, distal, surrounding the bulb laterally, and forming later the olivary and arcuate nuclei; and the other, the proximal band which forms the pontine nuclei.

Professor Winkler expressed the view that these olivo-arcuate-pontine cells, being of later phylogenesis, have not the same vital energy to resist degeneration as is possessed by the evolutionally older cell structures, and are therefore more susceptible to abiotrophy. He considers that these cases of primary olivo-arcuate-pontine degeneration support the embryological observations of Essick, which indicate that these structures are of later evolutional development. Moreover, the olivo-arcuate fibres in the inferior peduncle are myelinated considerably later than the spino-cerebellar fibres. This was demonstrated by specimens stained by Weigert's method.

Upon these grounds Professor Winkler is of opinion that the views of Edinger and Conolly—based upon studies in comparative anatomy—that the flocculus and vermis constituted the (old) palaeo-cerebellum, and the lateral lobes the (new) neo-cerebellum, must be modified. There is not in evolution a superimposition of a new cerebellum upon an old cerebellum, but an interpolation of a new into an old structure. He points out that the preponderant importance of the floccular development is undoubtedly lost in the human subject, but that it still retains a fundamental function connected with static equilibrium. He assumes that the olivo-arcuate-pontine fibres being myelinated at a later date are of later evolutional origin.

Professor Winkler then illustrated by a wax model the evolution of the neo-cerebellum by interpolation instead of by superimposition of a new on an old cerebellum, but, although it was quite possible, he was unable to assert that there was successive myelination of the cortical cerebellar fields which corresponded to the myelination of the spinal, arcuate, olivary, and pontine fibres.

A vote of thanks to the lecturer was proposed by Dr. HOWARD TOOTH and seconded by Dr. HENRY HEAD, who took the occasion to praise the valuable work which was being done by the exchange of lecturers and to point out that Holland was now the only European country which could be said to be really international in its outlook towards scientific work.

THE annual meeting of the French Association for the Advancement of Science will be held from July 24th to 29th at Montpellier.

THE Board of Trade is instituting an inquiry into complaints under the Safeguarding of Industries Act that boric acid and metaldehyde have been improperly included in the list of articles chargeable with duty under Part I of the Act, and that gallic acid and "R" tannic acid have been improperly excluded.

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EXCHANGE LECTURES.

THE University of London is to be congratulated on the initiative it has shown in arranging the series of exchange lectures with professors in the Faculty of Medicine of the University of Paris and in the Medical Faculties of certain Dutch universities. Nothing is more conducive to the development of the scientific spirit than a wide interchange of ideas. Too often difficulties of situation and of language circumscribe the results of some brilliant investigation, and from an educational point of view nothing equals the directly spoken address by one who is a master of his subject.

In the lecture which Professor A. Chauffard of Paris gave at the Royal Society of Medicine on March 23rd, an authorized translation of which is published at page 745, he discussed a problem which he has lately been investigating with the help of P. Brodin and A. Grigaut; the lecture contained a lucid description of the results they have reached as to the nature of the humoral syndrome of gout. Professor Chauffard paid tribute to the classical work of Sydenham, Bright, Gairdner, and Scudamore; he recounted the experiments by which Garrod demonstrated the excess of uric acid in the blood serum of the gouty individual—the crystalline deposit of uric acid upon delicate threads suspended in the serum. While Garrod's method may have lacked scientific accuracy, it is remarkable how closely the quantitative results which he obtained approximate to the more exact colorimetric methods of Folin and Denis. Professor Chauffard estimates that the normal proportion of uric acid per litre of serum varies between four and five centigrams; above this point hyperuricaemia commences. The researches he described confirm the observations first made by Garrod, that in gout there is a definite hyperuricaemia. It is interesting to note that of the 27 cases analysed the only exception to the rule of hyperuricaemia was an instance of juvenile hereditary gout. In this case, while there was an excess of cholesterin and bilirubin in the serum, there was an actual diminution of uric acid. The lecturer suggested that this is to be attributed to an exaggerated permeability of the kidney, and therefore a free elimination of the acid.

In discussing the question of the source of the excess of uric acid Professor Chauffard drew a distinction between endogenous and exogenous varieties: the former he subdivided into two, according to whether the excess of acid was the result of imperfect nitrogenous metabolism and the uric acid derived from the nucleo-protein and purins of the tissues, or whether the excess was the result of a retention by the kidney—he believes that in the early stages of gout there is a holding up of uric acid by the kidney. He described a group of important experiments designed to ascertain the part the liver plays in the metabolism of uric acid. Samples of blood were withdrawn from the portal and hepatic veins of dogs: in some cases the animals were fasting, in others they were fed on a highly nitrogenous diet of sweetbread, liver, or spleen. By estimation of the uric acid content in portal and hepatic blood it was demonstrated that, when a diet containing a considerable proportion of uric acid was given, the coefficient of retention in the liver was as high as 47 to 53 per cent. It was therefore concluded that during the digestive period a greater or less proportion of the uric acid substance brought by the portal vein is retained by the hepatic cells, the liver playing the part of a regulating organ designed to prevent the passage of the excess of uric acid into the blood. The fate of the uric acid retained in the liver is uncertain, but presumably some at least is utilized in the formation of urea.

Arguing from this experimental basis, Professor Chauffard expressed the belief that the hyperuricaemia of the gouty is an evidence of an insufficiency of the arresting function of the liver, that organ being incapable of retaining uric acid brought from the alimentary canal. The excess of uric acid which thus passes into the system is disposed of in various ways: a certain proportion is eliminated by the kidneys, another part is deposited in joints as sodium urate, in the tophi of the subcutaneous tissues, and in the urate incrustations of the kidney. In addition, there is probably a slight general infiltration of the body tissues with uric acid. Patients with gout are thus suffering from a double hyperuricaemia both in the body cells and in the serum. The syndrome, however, is more complex than a simple hyperuricaemia, and Professor Chauffard and his colleagues have found that there is also an accumulation in the blood of both cholesterin and bilirubin; this they look upon as further evidence of interference with hepatic functions, and the observation may serve to explain the occurrence of gall stones as a concomitant of the gouty state.

An interesting hypothesis was advanced in explanation of the acute crises of gout. Since the researches of Widal, Abrami, and Iancovesco, we have come to look upon these crises as precipitated by a disturbance of the colloidal equilibrium very similar to an anaphylactic reaction. In the gouty individual the uric acid possibly exists in an unstable colloidal form, which at any time may be imperilled by a diversity of disturbing causes—diet, fatigue, cold, etc. If the disturbance is sufficiently intense the acute attack of gout appears, and to the general sensitiveness must be added a local sensitiveness, which causes the inflammatory process to light up always at the same point, creating thus true centres of uric acid crystallization. In fact, the clinical syndrome may be divided into three stages—a latent sensitiveness, a provocative cause, and a local manifestation.

The first of the exchange lectures with the universities in Holland was given by Dr. Winkler, Professor of Clinical Psychiatry in the University of Utrecht, on May 3rd, and a synopsis will be found at page 769. The lecture affords a remarkable example of the application of clinical and pathological observation to a problem of far-reaching scientific importance; though necessarily of a highly technical nature, it was followed with close attention by a large audience. It was a fascinating argument on the structure of the cerebellum from the point of view of comparative anatomy and embryology, and was founded on prolonged observation of a case of primary olivo-arcuate-pontine degeneration. Sections through the cerebellum show a normal amount of the old spino-cerebellar fibres, but all the new fibres, olivo-pontine in origin, entering the cerebellum in the midline have disappeared, leaving the intermingled old cerebellar fibres intact; this serves to show that an interpolation, and not a superimposition of new fibres on old, has taken place in the process of evolution. The anatomical findings support the view that the bands of Essick found in the human foetus of 2½ cm. are of later evolutional origin, and are to be associated with the new cerebellum.

It may be asked what conditions in man can be related with the neo-cerebellum described in the lecture. We are indebted to Sir Frederick Mott, who has had the opportunity of examining Professor

Winkler's preparations at leisure, for the suggestion that it may be correlated with the dissociation of the fore limbs from progression, and the reciprocal simultaneity in the development of the visual directive and the tactile-motor executive faculty of the upper limbs, which has attained an extraordinary development in man. The clinical report shows that the pointing test failed on both sides, and that there was great incoordination and dysdiadokokinesis in both upper limbs. But it may be asked, Why no nystagmus? It may be because there was no evidence of vestibular affection and Deiters's nucleus was not atrophied. Again, bearing in mind the teaching of Hughlings Jackson that one-half of nervous symptoms should be attributed to overaction of unantagonized physiological functionally active structures, it may be assumed that there was no nystagmus because the eyes always act together and not independently; overaction of one neo-cerebellar system as compared with the other did not occur because both systems underwent a simultaneous abiotrophy. Sir Frederick Mott adds that from a biological point of view it would be of interest to know whether there is a progressive increasing development of these olivo-pontine neural structures in the lemurs (half-apes), apes, and anthropoid apes.

MENTAL HYGIENE.

IN the evolution of preventive medicine this country has played a pioneer part, and the names of Simon, Chadwick, Buchanan, Thorne-Thorne, and Power will always be remembered in connexion with sanitary science and the improvement of national health. The scope of preventive medicine has, of course, broadened and undergone the specialization that the progress of science and accumulating administrative experience have rendered necessary. Thus the control of tropical diseases is inseparably associated with the epoch-making work of Manson and Ronald Ross, while of our share in the rise of industrial medicine we can point with satisfaction to the individual efforts of Sir Thomas Oliver on lead poisoning in particular and of dangerous trades in general, to the work done by medical officers attached to the Home Office in the capacity of inspectors of factories, and to the investigations carried on by the Health of Munition Workers Committee during the war, and now the Industrial Fatigue Research Board (Medical Research Council) and its related scientific committees. The subjects of tuberculosis, cancer, alcoholism, and venereal disease have also been specially investigated by associations and other bodies in the hope of devising and enforcing efficient means of prevention. Ordinary medical disease may be compatible with fair efficiency on the part of the sufferer, but even slight mental defect is a most serious handicap to the productive work of the individual; mental hygiene is therefore the necessary supplement to physical hygiene, and the need of steps to prevent and lessen the incidence of mental inefficiency and disease has become glaringly obvious in the light of the experiences of the war. It is an economic problem of grave national importance.

Many years ago the pioneer investigations of the late Sir Francis Galton on heredity laid the foundations of eugenics as a distinct branch of science. It brought together medical, psychiatric, and sociological workers for the study and prevention of mental disorders and deficiency, criminology, and insanity; much valuable work has been done in connexion with mental deficiency, the early detection and education of abnormal children, infant welfare and after-care by various societies and associations, and by individual effort. But the study of mental hygiene has been perhaps less thoroughly organized in this country than in the United States of America, where the capacity of vigorous initiative for combined effort is such a prominent feature and where as long ago as 1908 a National Committee for Mental Hygiene was established in order to investigate the preventable causes of mental disease, the control of feeble-mindedness, and the problems of criminology. Much has been done by this vigorous committee on these lines, and reference may especially be made to the valuable work of the Phipps clinic at the Johns Hopkins Medical School, Baltimore. In our own country this example has been followed by the establishment last year, under excellent auspices, of the Cassel Hospital at Penshurst for the treatment of 60 patients—drawn from the educated classes but unable to pay the fees of ordinary nursing homes—who are suffering from nervous disturbance not due to organic change or necessitating certification. Four years ago (April, 1918) Canada started a National Council for Mental Hygiene, which enforced the principles of the earliest possible detection of mental defects, of special educational facilities in the regular schools for meeting the needs of defective children, and of the establishment of mental clinics. The French Ligue d'Hygiène mentale, founded in December, 1920, has ten committees studying various aspects of the subject—such as the relation of mental disorders to general diseases and intoxication, the struggle against alcoholism, the treatment of abnormal children, psychology of trades, the out-patient treatment of early mental disturbance, reforms in the care of the insane, the organization of psychiatric teaching, and propaganda in mental hygiene. A congress arranged by this body is to be held on June 1st to 4th next; at it the following subjects are down for discussion: the treatment of psychopaths, occupational selection in relation to mental hygiene, educational methods and applied psychology, and mental hygiene in the family. National Councils for mental hygiene not only link up the various bodies working in their own countries but, by combining with similar councils, form an international bureau for the communication of knowledge thus collected for wider distribution and for propaganda.

The proceedings of a provisional committee which held a meeting at the rooms of the Royal Society of Medicine, under the chairmanship of Sir Courtauld Thomson, on May 4th are reported elsewhere in this issue. The object was to establish a National Council for Mental Hygiene on the same lines as the National Councils mentioned above. Since its aims are wide and will extend far beyond those ordinarily regarded as the aims of pure medicine, this Council will, it is to be hoped, receive the support of many whose activities lie in other directions. It will, in the first place, encourage, correlate, and organize means of communication between the existing associations and institutions in this country interested in mental health and disease; it will join with the Councils of other nations in an international league for the spread and utilization of knowledge thus accumulated; it will study the etiology and further the prevention of functional nervous and mental disorders by investigating the problems of heredity, environment, alcohol, syphilis, and industrial and other conditions; it will endeavour to obtain for the somewhat neglected subject of mental hygiene a more prominent place in medical education, so that the newly qualified practitioner, one half of whose patients have some form of minor mental manifestation, will no longer find himself so much handicapped in his equipment; it will further the establishment at general hospitals of psychological clinics, such as Dr. H. Rayner originated many years ago at St. Thomas's Hospital, for the treatment of the early stages of mental disorders; it will investigate the means of organizing the conditions for treatment, especially of the early stages, of mental disorder, of attracting a good class of educated persons as attendants, and of arranging for

workers trained in social service to visit the patients of the psychological clinics in their homes. By judicious propaganda it will seek to spread among the general public sound knowledge of the principles underlying mental health and disease. Parents must be enlightened in the right way of bringing up their children, and schoolmasters and other teachers must be instructed in the importance of the influence that they can exert on the mental health of their pupils. Long as is this list, it does not exhaust the potential activities of the National Council; criminology and penology urgently require consideration, and, as Dr. Henry Head pointed out in his address, recent research shows the importance of mental hygiene in the life and productive power of the industrial worker.

SECOND THOUGHTS ON THE BUDGET.

THERE was a general feeling of relief when it was known that the reduction in the income tax which the daily press had foreshadowed was contained in the Government's proposals for 1922–23. That feeling was due in part to a sort of tacit assumption that the fiscal problem could not be so dangerous as had been suggested if the Chancellor could speak, with all the information obtained through official channels, of hopeful signs of trade revival and then proceed to reduce the load of taxation. A more prolonged consideration of the facts leads to a clearer recognition of the unpleasantness of having to admit that the nation must renounce for the present its programme for paying off debt, and of the lack of any solid ground for supposing that that programme can be resumed next year unless, in the meantime, there can be put into force those further and more drastic economies which are so earnestly desired by everybody and so difficult of achievement by anyone.

A factor which is sometimes lost sight of, but the importance of which it is not easy to exaggerate, lies in the system of "graduation," which applies not only to income tax and super-tax, but also to the death duties. In a period of currency inflation, such as that during which the various war issues were floated, prices and profits are at a high monetary level and the yield of the income tax is more than proportionately high. What we are now experiencing is the converse—a fall in monetary values and a more than proportionately reduced yield of income tax. This is a general tendency, of which the present trade depression is a necessary accompaniment and aggravation. Unfortunately, to whatever level monetary values and the general rate of interest fall, on the long-dated Government loans the "war" rate of interest will have to be paid—assuming as we do that the schemes for *compulsory* reduction advocated in some quarters meet with the fate that such confiscatory schemes deserve. The golden time for repayment of debt was when values stood high and the income tax yielded its maximum return to the Exchequer; but for the present the country has shot its bolt, and most students of industrial problems are agreed that some relief from taxation is almost essential if the hope of renewed trade activity is to be realized. Whether that renewal can be accomplished, and, if so, whether it will produce a sufficiently increased revenue to enable repayment of loan to be resumed, are the questions which lie at the root of the whole problem, and their solution by the facts of this financial year will go far towards determining the fiscal history of the next decade. In the meantime the expenditure side of the national accounts has one or two hopeful features. It is an open secret that the departmental estimates were based on a Board of Trade index figure of 100 per cent. above pre-war levels, and the subsequent fall in prices should result in savings accruing to the Treasury; moreover, in spite of the comparative small margin of £25,000,000 allowed for Supplementary Estimates, an energetic pursuance of a policy of economy throughout the year may yet succeed in showing a balance on the right side of the account at the end of the year. The Budget has been attacked as an income-tax-payers' budget; it is an unfair description, but it has this much of truth in it, that the financial burden of the war was very largely borne by that section of the community, and it is only right that they should be among the first to feel relief. Its extent may be gathered from the table printed at page 777; it will at least be apparent that the burden remaining is sufficiently heavy to entail a real sacrifice on the part of every taxpayer.

It is proposed that several minor alterations in the Income Tax Acts should be made; the only one likely to concern any considerable number of our readers is that for placing all employed persons under Schedule E, in which case tax will be payable on the income of the current year instead of on the three years' average. For this procedure the Chancellor was able to claim the support of the Royal Commission on the Income Tax, though apparently the change will at first involve the Revenue in some loss, seeing that the three years' average for 1922–23 still contains one "good" year—namely, 1919. The success or failure of this change will depend largely on the manner in which it is carried out; if, for instance, employed persons are to be worried for small supplementary payments because their emoluments have risen to some small extent during the year, we think that they will succeed in convincing the authorities that the old definite basis provided by the previous years had much to recommend it. It would be useful if it could be made clear, in Committee or otherwise, that persons whose main income falls for assessment under Schedule D could include therein the income from employments, provided that the services given are of an ordinary professional character; that would regularize, so far as the medical profession is concerned, an existing practice which might otherwise be in jeopardy.

Little comment on the other changes to be effected by the Budget is called for here. The reduction in the postal rates is, perhaps, the most welcome, even though it is accompanied by narrower limits as to weight and unaccompanied by any reduction in the stamp duties levied on receipts or cheques. The country may have more misgivings than the Chancellor shows in his laudatory observations on the past achievements of the British taxpayer, but has none the less good reason to feel thankful that the past financial year has closed without disaster and that the present one begins with some prospect of relief from the almost intolerable burdens of the past few years.

MOTOR TAXATION.

MR. H. MASSAC BUIST writes to express the view that the relief of 1s. in the £ on income tax is more valuable to motorists, particularly to professional men, than any concession in the matter of car licence fees. He points out that no recommendation by the Departmental Committee on Motor Vehicle Taxation, which is now investigating the matter, could be brought into effect for twelve months. In my notes on this subject in the JOURNAL of April 29th (he says) I attempted to compress the history of motor vehicle taxation overmuch, with the result that I wrote that the original horse-power tax was introduced in 1904, whereas it was incorporated in the Budget of 1909, at the same time as a duty of threepence a gallon, subject to certain rebates, was imposed on petrol. This scheme replaced a tax according to vehicle weight, a system which no organization concerned with passenger-cars

advocates to-day. A reduction in the price of petrol may be announced even before these lines appear in print, and that despite the fact that the oil market in America, which controls prices throughout the world, is looking, not for a fall, but for a rise in the price of fuel. Any fall in direct taxation in this country assists the lowering of the cost of fuel, because all these charges are passed on automatically by the fuel-vending organizations, which are established for the purpose of making profit by their enterprise and not to collect revenue for any Government. Therefore the relief to the motorist by the process of reducing income tax results in a still further benefit by assisting to bring about a lowering of fuel costs, which are a more important part of the expense involved by the ownership of a motor vehicle than the cost of a licence fee. Furthermore, as long as the insurance rates on motor vehicles rule on the scale we have experienced in the post-war period, so long will it be practically impossible to make any reasonable case against present taxes as too high. Further, if it could be proved that the sales of the cheapest form of American car, even if assembled or part manufactured in this country, were affected adversely by the present taxes so that fewer of these machines than of other makes were coming into use, there might be some solid ground for recasting the basis of the levy. But the plain fact is that the car which continues to sell in greatest numbers is the Ford. Any other manufacturer, British or foreign, would be glad to sell as many motor cars in this country, or cars to the same value in term of pounds, as the Ford turnover. While that obtains there is no argument that would induce a Chancellor of the Exchequer to recast the whole system of motor taxation. The campaign that aims at getting the horse-power tax removed, and the levy placed on fuel, is based always on seeking the individual motorist's support by pointing out to him that he will be paying less taxes. Yet the organizers of that campaign admit that the net amount of revenue to be raised by such taxation must be the same. One section implies that the solution of the problem lies in causing the commercial motorist to carry part of the burden at present borne by the private passenger-car owner. It is, however, so essential to assist commerce and industry in all their aspects that no such scheme can ever meet with the approval of Government, no matter of what cast of politics. Therefore, another section contents itself with pointing out to each car-owner in turn that he is paying too much tax and that some other passenger-car owner will pay more by the given new scheme. Those who advocate a change in the basis of taxation do not seem to seek out the private car-owner who, under a new scheme, would be paying not less but more in motor taxes than he is doing under the present system. Yet the man it is proposed to charge more has a right to be consulted. For instance, it is obvious that the mileage of medical men would bring them into the category of those who would pay more than the ordinary motorist who keeps a car for odd work or week-end pleasure runs. When the fuel tax was in force this fact was recognized by giving medical men rebates of 50 per cent. off the duty. The objections to reintroducing any scheme of taxation on fuel involving rebates are that the system led to leakages and that the cost of collection was more than the yield was worth. Most motoring bodies agree that any scheme for a return to a fuel tax must be based on the principle of no rebate for any class of user. Yet any scheme for the taxation of fuel must bear hardly on those who use cars for business or professional purposes; among them would be medical men, who would, in the long run, pay more in order that those motorists who do not use their cars so habitually might pay less. The more I ponder the matter (Mr. Buist continues) the more I come back to the point that we had better leave our motor taxes as they are and organize ourselves instead, to insist that the moneys we contribute are applied effectively to the purpose for which they are levied—namely, the provision of better and still better roads; for such provision, incidentally, would save us much in petrol and in tyre costs per annum. As it is, our money is being wasted overmuch. That process will continue so long as we remain disorganized among ourselves, quarrelling because each individual is made to believe that he is paying a few shillings, or perhaps pounds, a year more than otherwise he would.

REGULATIONS TO PREVENT LEAD POISONING.

A PAMPHLET on the regulations regarding the manufacture and use of lead and its compounds in various countries[1] has been issued by the Stationery Office. Its appearance is in one sense opportune, for it was only in October last that at the Labour Conference of the League of Nations in Geneva the question of the employment of lead in painting was raised; it was insufficiently discussed and rather hurriedly voted upon. The object of the pamphlet, prepared for the Governors of the Imperial Mineral Resources Bureau, is to show how, by regulations, work in lead has become less dangerous than it was half a century ago. The author, Mr. Stone, has given more than a mere summary of industrial legislation in various countries. The lead-producing countries of the world are the United States, Germany, Austria, and Mexico. Lead ores are mostly sulphide (galena) and carbonate (cerussite). Experience all the world over, with the one exception of Broken Hill, has shown that the mining of galena is not followed by lead poisoning. The dust given off in the mines has, however, been a frequent cause of pneumonokoniosis. This was the case three or four decades ago in lead miners working in the remote dales of the county of Durham. As regards regulations for lead works there are none in any country superior to those of Great Britain. Several of the other countries have taken their cue from her. In New South Wales, under the Mines Inspection Act, 1901, in the regulations regarding red lead and flue dust, it is required that the dust must be carefully wetted as soon as it is drawn from the flue, also that the furnaces in which lead is undergoing conversion shall be hooded. Baths, provided with hot and cold water, and "changing houses" are arranged for. In Canada, where 1,058 men are employed in lead smelting and 5,795 in industries making use of lead, it has not been found necessary to introduce many special regulations. In the United States regulations provide for the elimination of dust by water sprinkling, the use of automatic machine sampling and of exhaust ventilation. Where dust cannot be prevented respirators must be worn, and in dangerous processes overalls also; shower baths must be provided and convenient luncheon rooms. The regulations regarding red lead works in France are of quite a high order. A medical examination of all applicants for work is compulsory, and a medical certificate must be produced stating that the applicant shows no signs of plumbism or of any illness likely to be aggravated by working in lead. The certificate must be renewed one month after the engagement, and afterwards once a quarter. A register of illnesses is also kept. In Germany attention is particularly directed to the prevention of dust. Floors must be wet cleaned daily. No dust-collecting chamber or flue must be entered by workmen until it has been cooled and ventilated. Impermeable gloves must be worn or the hands well greased, when they are liable to come into contact with lead salts in solution. Food is not allowed to be taken into the workrooms, and smoking is prohibited. A monthly examination of the workers is required. Women and young persons are not allowed into flue dust chambers. The regulations in Austria regarding the escape of dust and fumes are said by Mr. Stone to be fuller than those of any other country. They certainly run Great Britain rather hard. We shall not be far wrong in saying that Professor Teleky has largely contributed to that state of things. Specimens of air in certain parts of the works are taken under a special order of the mining authority and analysed by competent chemists to ascertain the amount of lead it contains, and a record is kept of these analyses. Cleanliness is rigidly insisted upon and ample bathing facilities provided. Medical examination

[1] *Laws and Regulations relating to Lead Poisoning; being an Analysis with Texts of the Laws and Regulations made in the Chief Industrial Countries to Prevent Plumbism.* By Gilbert Stone, Barrister-at-Law, B.A., LL.B. Kingsway, London: His Majesty's Stationery Office. 1922. (Med. 8vo, pp. 250. 5s. net.)

of the workers is imperative. Regulations for white lead works are but an extension of those used in other departments of the lead industry; those in force in Great Britain have been attended by the most satisfactory results from a health point of view. The number of cases of plumbism in the white lead industries has been progressively reduced. In 1900–1904 there were 183 cases; in 1905–1909, 76; in 1910–1914, 31; in 1915–1919, 17. In Great Britain no person can work in a white lead factory for more than a week without a medical certificate. The regulations in France and Germany are on lines similar to those in Great Britain. The regulations in Belgium deal effectively with dust. It was in 1906 that the Workmen's Compensation Act came into operation in Great Britain. Lead poisoning was then scheduled as an industrial disease. One of the immediate results of this was a rise in the number of cases of lead poisoning reported in the manufacture of pottery. It is interesting to note that while in 1906 in this country lead poisoning was made an industrial disease and qualified the sufferer for compensation, in the United States it is not regarded as an industrial disease but as an "injury," the meaning of which word in some of the States is "an injury or disease arising out of employment." The tendency, however, nearly all the world over is to regard lead poisoning as a disease arising out of, or in the course of, occupation, and to be compensated. One of the effects of bringing lead poisoning under the Workmen's Compensation Act has been not only to increase the notification of the minor forms of the malady, but to bring within the meaning of the Act such consequences of working in lead as nephritis and cerebral haemorrhage. Mr. Stone has given to all who are interested in the subject of lead poisoning an extremely useful compilation. It ought to be of use to medical officers of lead works and to certifying factory surgeons.

THE CASSEL HOSPITAL FOR FUNCTIONAL NERVOUS DISEASE.

IN connexion with the establishment of a National Council for Mental Hygiene at the preliminary meeting held on May 4th, the unobtrusive activities of the Cassel Hospital for Functional Nervous Disease, founded and endowed last year by the late Sir Ernest Cassel, naturally occur to mind. Its object, as pointed out in our columns a year ago (1921, i, 680), is to provide for members of the educated classes who cannot afford the expense of professional care in nursing homes, and are not certifiable, the most efficient treatment for the conditions commonly known as neurasthenia, nervous breakdown, and loss of power not associated with definite structural change. The provisions made for the care of such patients at the Cassel Hospital, Swaylands, close to Penshurst, are ideal; the hospital is a fine mansion in quiet and beautiful surroundings with extensive grounds containing a wonderful rock garden, tennis courts, and a golf course. The medical director (Dr. T. A. Ross) and two other medical officers have charge of the sixty patients, whose treatment consists in sympathetic consultations conducted with tact and without any suspicion of hurry. By the appointment of Major H. Hume to manage the business side of the hospital Dr. T. A. Ross has been wisely relieved of responsibilities and distractions which so often prevent medical superintendents from devoting a whole-minded attention to the purely professional supervision of the patients. There is in addition a strong medical committee, the members of which, when occasion arises, willingly provide individual assistance in the exceptional cases requiring special consultation.

THE SCHICK REACTION.

IN the *St. Bartholomew's Hospital Journal* for May, 1922, Sir Frederick Andrewes, F.R.S., publishes an interesting note on the reactions of 157 students to the Schick test for identifying individuals susceptible to diphtheria.[1] It had been inferred from the results of various workers that the proportion of immune persons in any population was a function of the economic status of the population tested—that it would generally be higher in the lower than in the middle or upper classes. Zingher, for instance, found over 80 per cent. immune in the school population of poor districts of New York, but only 33 per cent. in good-class schools. Sir Frederick's results are consistent with the truth of the hypothesis. Of the 157 students tested, 103, or 65.6 per cent., gave a positive result—that is to say, only 34.4 per cent. were immune. Blood was taken from a good number of the volunteers and tested on guinea-pigs. The immunes had from 0.1 to 5 units of antitoxin per cubic centimetre; among the non-immunes 27 out of 30 cases had none, or less than 0.001 unit; the remaining 3 appeared to have small amounts and are being reinvestigated. Of 21 men who said they had had diphtheria, 15 were positive and 6 negative, illustrating the well-known fact that an attack of clinical diphtheria may confer but little protection. Pseudo-reactions were fairly common. The tests themselves were carried out by Dr. O'Brien and his colleagues.

[1] BRITISH MEDICAL JOURNAL, 1921, vol. ii, pp. 994, 1001 (December 10th).

THE WEIGHTS OF INFANTS.

WE print elsewhere a letter from Professor Karl Pearson on the information to be derived from the record of weights of infants. Professor Pearson, on the basis of numerous statistical data accumulated in the Francis Galton Laboratory, has constructed two charts which should supersede those in actual use.[1] Not only can one read off from the chart the relation between an infant's actual weight and that of the general average in working-class families, but one can also make a rough prediction of the infant's fate at the end of the first year of life. This latter possibility has been attained by statistical study of the after-histories of babies of different weights. For instance, suppose a certain female infant aged 16 weeks weighed 14 lb. The chart tells us that less than 15 per cent. of all female babies of that age are heavier. If now, merely using the datum of weight, we ask what are the infant's prospects at the end of fifty-two weeks from birth, the chart informs us that not many more than 35 per cent. of all babies will be found healthier than this one. Of course such a prediction is not very secure. As Professor Pearson points out, weight is by no means the only factor in the health of the baby; the statistical correlation of an index of health and weight is less than 0.5. But the charts will be exceedingly useful for interpreting the significance of plotted weights. It will be easy to learn whether a child is maintaining or improving its grade of weight and health. Those in charge of infant welfare centres and clinics will, we feel sure, welcome this method of investigation.

[1] The pair of charts separately mounted can be purchased from the Cambridge University Press, Fetter Lane, E.C.4, for 7s. 6d. net.

FAMINE AND DISEASE IN EAST EUROPE.

THE three last reports of the Provisional Health Organization of the League of Nations, issued on March 25th, April 4th, and April 13th, contain general information on the epidemic situation in the famine zone of the Ukraine; an enumeration of the cases of cholera in the Ukraine and in Russia; and statistics of infectious diseases in Poland, Latvia, and Hungary. In the Southern Ukraine the districts of Odessa and Nikolaiev are the most seriously affected, and 25 per cent. of adult mortality and 40 to 50 per cent. of infant mortality is attributed directly or indirectly to famine. Medical reports indicate a lessening physiological resistance in the population due to the famine and the use of food substitutes. Another circumstance which becomes more serious with the approach of summer is the bad condition of the water supply. In Odessa the waterworks are no longer in use; the reservoirs, which are 42 km. from the town, in the middle of the famine zone, have been abandoned by the workers. Water is sold in the streets at 25,000 roubles a jar; hospitals obtain water with great difficulty; the inhabitants have been using snow and rain water, but this source of supply will very soon fail. Cholera reports for April show a more serious spread of the disease than that indicated

by the figures for March. From January 1st to March 31st 1,165 cases were reported from the Ukraine. The epidemic originated in the migrations of refugees from famine zones and it spread along the railway lines, as is indicated by the numerous cases of cholera among railwaymen and in the towns situated on important railway lines. Strict sanitary control at railway junctions is urgently necessary. In Russia proper 299 cases of cholera were reported between January 1st and February 18th, occurring in widely different localities. The reappearance of this disease over a wide area from the beginning of the year is a disquieting feature of the reports. The epidemic condition of the countries bordering on Russia remains serious. From February 4th to 19th, according to provisional information, there were in Poland 5,140 cases of relapsing fever with 208 deaths; other figures are as follows: Typhus 3,730, and 275 deaths; enteric fever 1,036, and 68 deaths; dysentery 136, and 10 deaths; smallpox 106, and 24 deaths. The progress of relapsing fever in Poland has been as follows: In 1919, 2,376 cases with 153 deaths; in 1920, 7,079 and 293; in 1921, 14,163 and 414; for the first seven weeks of 1922, 13,415 cases and 582 deaths.

THE OUTLOOK IN TROPICAL MEDICINE.

DR. ANDREW BALFOUR, at the Royal Sanitary Institute, on April 26th, delivered an address on the outlook in tropical medicine. His keynote was the value of research coupled with the importance of education of both the general public at home and the indigenous tropical races in sanitary hygiene and the prevention of disease. Advance in knowledge of the cause and process of disease alike in temperate and tropical climates had long suffered from the bane of empiricism. Conservatism and hide-bound beliefs were hard to die. The fetish of fumigation and disinfection for the elimination of disease was often but a cloak for ignorance of the true causes of infection, which enlightened research had done, but still needed to do, much to remove. Granted a man possessed the qualities which fitted him for research, it was of the utmost importance that his work should not be hampered by the calls of routine examination coming from hospital or private sources. He should be left absolutely free and unhindered to carry out his own line of research in his own way. Yet it was remarkable what had been accomplished in the course of routine work. The late Sir Patrick Manson, when engaged in general practice at Amoy, made his first discoveries in filariasis. Constant revision of accepted beliefs as to the cause and course of infective processes, particularly in tropical disease, was needed to verify the correctness of our conclusions. Dr. Balfour instanced ankylostomiasis and plague. With regard to the former, he said that recent observation by American workers had shown the pig to be a disseminator of hookworm larvae, a fact hitherto not generally recognized, although previously suggested by investigators in South Australia. For the prevention of plague it was doubtful whether efforts to destroy the rat were being pursued on right lines. The fact that their fertility and rate of breeding surpassed the rate at which they could be exterminated suggested that measures should be directed to checking their productivity. Attempts based on a study of the bacteriology of the urogenital tract of the animal had been made with a view to causing infective abortion and sterility, but so far without success. Sanitation in the tropics was a subject which until the war had received but little serious attention. Thanks, however, to the lessons learnt in the past eight years courses of instruction were now open to men and women to qualify as sanitary inspectors in the colonies, and a diploma in sanitary science as applied to the tropics was now available.

BIOLOGICAL STUDIES IN THE MADEIRAS.

DR. MICHAEL GRABHAM, who lectured at the Royal Institution on May 5th on biological studies in the Madeiras, had a fascinating story to tell of the life that is to be found on and about those mountain tops in the Atlantic. Each island of the archipelago appears to have a distinct geological history, and this is borne out by biological evidence—for example, each island or rock has its own peculiar examples of the *Testacea*, and only six or seven of the 170 species are common to all the islands in the group. The Atlantic might be lowered a hundred fathoms without merging the great component rocks of the Madeiras in a common connexion. At the time when Madeira came into human occupation five hundred years ago—for Dr. Grabham rejected the fables of an earlier settlement—the flora and fauna were already specialized and established. Just as the surface of chalk at Eastbourne has undergone no appreciable change since Caesar's camp was pitched upon it, so, to judge from the fossils, the biological conditions in Madeira existed as they do now for long ages before the advent of man. It would be less bewildering to believe, said Dr. Grabham, that all the specialized forms of life to be found in these Atlantic islands were human introductions than to trace their descent in the dim past from ancestral forms which no longer survived. He described some of the plants in detail, especially the *Sechium edule*, which yielded a fruit not unlike a pear, possessing highly nutritious properties, which were appreciated during the war when the U-boats were threatening food supplies. Madeira, however, has suffered greatly from plant pests, for which its winterless climate is supposed to be congenial. He spoke especially of the recent depredations of the Argentine ant (*Iridomermyx humilis*), and said that if it was true that the British Isles were already invaded by this insect it would be advisable for the Ministry of Agriculture to study American experience in countering its ravages and their own experience in Madeira. This ant established itself in Madeira in destructive colonies up to 2,500 feet above sea-level. Coffee cultivation was ruined, and every sort of fruit tree—the citrus especially—which would support coccus or aphis was attacked. By surrounding a lemon tree with a circle of powdered potassium cyanide, so that every ant in passing to or from the tree was killed, he found that more than forty thousand ants had been engaged in draining one tree of its vitality. There was no foundation, however, for the statement that the birds of Madeira had been destroyed by the Argentine ant, for Madeira was as full of bird music as ever. The ant had many enemies, especially spiders, which spread loosely stretched snares in every corner; and there were signs now that the first wild activity of this pest was abating. The turbulent seas around Madeira were extremely interesting from the biological point of view. One ungainly fish which he exhibited was a species of bass, essentially subtropical, but occasionally found in the English Channel, where it was known as the wreckfish. In Madeira its beautiful white flesh was appreciated. Generally it lived well away in the open sea at a depth of from 2,000 to 3,000 feet, and when it was caught and drawn up to the surface from this astonishing depth it came up so distended as to be, not indeed dead, but in a cataleptic condition. In this fish the air bladder was prolonged into a tube which penetrated the brain, and with its attachment by ossicles seemed to serve as a resonator and interpreter of weak vibrations. He had examined the stomachs of fishes drawn up from very great depths, and had generally found them empty; but the fishes were in good condition, as though in these depths they relied upon the absorption of much of their nourishment from the substantial supply which it was believed was held in solution in sea water. Occasionally great commotions occurred in the submarine depths about Madeira. In one instance, while some cable work was taking place, an agitation occurred which lasted with increasing intensity for four days and then suddenly stopped. Many miles of submarine cable disappeared, and the ocean floor had to be explored for fifteen miles before an undisturbed bed was found. Nothing of this catastrophe would have been known but for the cable experiments which were proceeding at the time. In these deep-sea catastrophes there was widespread destruction of marine life, as though the water had been poisoned by the release of noxious volcanic vapours.

IMPORTANCE OF EARLY TREATMENT OF CANCER.

LEICESTER, following the example set some years ago by Portsmouth, has taken steps to call the attention of the public to the danger of failing to recognize the early signs of cancer or of failing to seek medical advice so soon as any suspicion arises. A public notice, signed by the medical officer of health, Dr. C. K. Millard, has been inserted in the newspapers, and a leaflet has been prepared for distribution from the Health Department and by health visitors. The public notice points out that in the early or localized stage it is often quite possible for cancer to be completely removed by a surgical operation, but that very many cases are found to have got beyond the curable stage when the sufferers first apply for treatment. "In this disease immediate action is imperative, and delay is disastrous. Everything depends, therefore, upon early resort to skilled medical advice, recognition of the disease, an early operation, and prompt treatment." It is added that treatment by radium or *x* rays, though hopeful, is still in the experimental stage, and the very necessary statement is made that "although many alleged 'cures' have been announced, there are none which have so far substantiated the claims made for them." The leaflet points out that of the number of persons who die each year from cancer—and that number is increasing—many could have been cured if they had applied earlier for medical advice, and that cancer in its early and curable stage may give rise to no pain or feeling of ill health. Special attention is directed to the early symptoms of cancer of the breast and of the uterus, to the danger of warts on the lower lip, or any sore or swelling on the tongue in men over 45, and to the early symptoms of rectal cancer. In each instance it is emphatically pointed out that a large proportion of such cases are cancer, and in their early stage are curable. On the first page of this leaflet, which is based on that issued at Portsmouth, it is said: "The importance of this subject to the public is shown by the fact that of all deaths of persons over 40 years of age, one in nine is from cancer."

INDUSTRIAL HYGIENE.

ACCORDING to *Industrial and Labour Information*, issued by the International Labour Office of the League of Nations, a Workers' Health Bureau has been founded in the United States by the trade unions as a co-operative undertaking. A pamphlet, which has been published to explain the aims of the bureau, emphasizes the importance of preventive work and health education. It is suggested that each union should organize its own health work and carry it on with the advice and co-operation of the Workers' Health Bureau. The advisory committee of the bureau includes a medical expert, whose advice will be at the disposal of the trade unions in the setting up of their own health departments. The objects of the bureau are: To conduct a scientific industrial study of the health needs of any trade union and recommend a health programme for that trade union based on such study; to recommend an educational programme covering the subject of workers' health; to establish health departments within local trade union branches; to train workers' health committees to carry out the health programme in the workshops; and to select doctors, nurses, and teachers for conducting the union's health work. The Industrial Hygiene Section of the International Labour Office, Geneva, proposes to publish from time to time a series of notes giving information regarding new publications on industrial hygiene. The notes will be universal in scope, and in order that they may be as complete as possible it is desired to include references, not only to books, but also to occasional articles and reprints of lectures published in medical or other periodicals. The International Labour Office therefore asks members of the medical profession and others interested in problems of industrial health to send particulars of any new publications, including articles in periodicals, suitable for inclusion in the lists. Such information should be addressed to the Industrial Hygiene Section, International Labour Office, Geneva, Switzerland; it should comprise the author's name, the title of the book or article, and the publisher's name, or, in the case of an article, the name, date, and number of the periodical in which it appears. In return the International Labour Office will be glad to supply its correspondents with the bibliographical notes as they are issued.

THE ANGLO-BATAVIAN SOCIETY.

THE Anglo-Batavian Society was founded in May, 1920, with the object of promoting good fellowship between the British and Dutch peoples. Among the admirable activities of the society it has taken a share in arranging an exchange of medical and scientific lectures between Holland and England. The scheme was successfully initiated last year, and the first of the series given in England this year was that on the human neo-cerebellum delivered by Professor Winkler, of Utrecht, on May 3rd, as more fully related at page 769. On the evening of the same day the Anglo-Batavian Society gave a dinner in honour of Professor Winkler at the Langham Hotel. Sir Walter Townley, K.C.M.G., formerly British Minister to the Netherlands, was in the chair, and among the guests present were Professor Geyl, Sir D'Arcy and Lady Power, Sir Frederick and Lady Mott, Sir James and Lady Purves Stewart, Sir John MacAlister, Professor and Mrs. Bayliss, and Professor and Mrs. Starling. After the loyal toasts had been honoured, Sir Walter Townley proposed the health of Professor Winkler, who responded in excellent English, expressing his thanks for the reception he had received in London and his hopes for the continuance of cordial relations between the two countries. The toast of "The Anglo-Batavian Society" was proposed by Professor Starling, and, in the unavoidable absence of the Netherlands Minister (Mr. Crommelin), Dr. Bisschop, honorary secretary of the society, responded. The society, he said, included in its scope the encouragement of Anglo-Dutch football matches and regattas, as well as the promotion of scientific lectures. The toast of "The Other Guests" was proposed by Sir D'Arcy Power, and responded to by Sir James Purves Stewart, and the health of the Chairman was given by Dr. Roosmale Nepveu, of the Dutch Legation.

AT the annual meeting of the Medical Society of London Lord Dawson of Penn was elected President for what will be the 150th year of the Society's existence.

THE Cavendish Lecture of the West London Medico-Chirurgical Society will be delivered on June 13th, at 8.15 p.m., at the Kensington Town Hall, by Professor Harvey Cushing, M.D., on "The meningiomas (dural endotheliomas), their source and favoured seats of origin." The lecture will be followed by the annual conversazione of the society.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Venereal Disease: Disinfection Policy.

SIR J. D. REES asked, on May 8th, how many county councils, county boroughs, and borough councils have adopted the immediate self-disinfection policy of the Society for the Prevention of Venereal Disease. Sir A. Mond said that as grants were not payable in respect of measures in pursuance of the policy mentioned he had no special information as to the extent to which that policy had been adopted, but so far as he was aware it had never even been claimed that more than an extremely small proportion of the local authorities concerned had adopted it.

Grants to Voluntary Hospitals.—Mr. Charles Edwards asked, on May 3rd, whether the Minister of Health had received a protest from the Royal Gwent Hospital, Newport (Mon.), and similar institutions, against the decision of the Voluntary Hospitals Commission that the grants for hospitals should be based on the income for the year ended December 31st, 1920, or the three years 1918, 1919, 1920; whether the Minister was aware that for the year 1921, and the immediate following years, it would be impossible to show a similar income owing to reduced earning of workers and others; and whether, in order that the hospitals should derive some benefit from the half million sterling set aside by the Government, he would amend the terms and conditions. Sir A. Mond replied that representations in this sense had been made to the Voluntary Hospitals Commission by certain hospitals in South Wales. It was laid down by the Government, as one of the

fundamental conditions for grant, that assistance should ordinarily be based on the amount of new money raised or in sight; the Commission had no power to vary this rule, but might make emergency grants in cases where a hospital had exhausted its realizable assets, and without assistance would be compelled to close beds.

Illegal Traffic in Drugs.—Mr. Ramsden, on May 4th, raised the question again whether the powers of punishment for illegal trafficking in drugs were adequate. Mr. Shortt recalled that the regulations only came into force on September 1st last. They were being carefully watched by the Home Office, which was in close touch with the police authorities, and if it appeared that the present powers were insufficient he should not hesitate to come to Parliament for more. It was clear, however, in view of the international character of the traffic, that it could be effectively dealt with only by international co-operation, and the whole question of the measures necessary to cope with this traffic has been engaging the attention of the Advisory Committee appointed by the League of Nations.

Flogging for Drug Traffickers.—On inquiry by Colonel Burn whether the Government would support legislation to authorize flogging and imprisonment without the option of a fine for individuals convicted of carrying on the illicit drug traffic in this country, and deportation in addition, if the offender was an alien, Mr. Shortt said, on May 9th, that the question of taking further powers and extending the law was under consideration. The power to deport already existed, and was used whenever possible.

Women Medical Students.—Mr. T. Griffiths asked, on May 4th, whether in view of the fact that a Government grant of £30,000 a year had been made to five London hospitals where clinical units had been set up, that a Government grant of £16,000 had been promised this year to the London Hospital, in which was included £3,000 from the University Grants Committee, and that the last named hospital now excluded women medical students altogether, and of the remaining four one only admitted them without restrictions, the Government intended to intervene in any way so that those who accepted public money did not discriminate against one section of the public who contributed the money. Sir A. Mond said the question of the admission of students to university institutions was essentially for the discretion of the university authorities, with whose autonomy the Government desired to interfere as little as possible. The Government had no information indicating that the facilities for university education in medicine of qualified women were inadequate. Admission to the London Royal Free Hospital School of Medicine, which was also grant-aided, was wholly confined to women.

The Vaccination of Air Force Recruits.—Captain Guest, in reply to Mr. Blomfield, on May 9th, said that recruits were not admitted to the Royal Air Force if they did not wish to be vaccinated. No man was forced to be vaccinated, but it was not possible to undertake the responsibility of accepting men for service who stated that they were unwilling to be protected against small-pox infection, especially as enlistment in the Royal Air Force involved an obligation to proceed, if required, to eastern countries, where unavoidable exposure to infection was common.

Lunatics in Chancery.—The Lunacy Bill, which was introduced in the House of Lords, and had been read in the Commons for the first time on May 1st, had second reading on May 9th. Its object is to amend the law as to Chancery lunatics. In the first clause provision is made that a Master in Lunacy and an Assistant in Lunacy may act for two Masters in Lunacy. Clause II declares that the provisions of Sections 133 to 143 of the Lunacy Act, 1890, with regard to vesting and other orders, shall apply to criminal lunatics, and enable some small changes in property administration.

The Purity of Milk.—Mr. Doyle asked, on May 3rd, if the Minister of Health was aware that analysis and bacteriological examination of milk samples recently taken in Newcastle-on-Tyne showed that approximately 50 per cent. were seriously polluted. Sir A. Mond said he was aware of the results stated in recent reports of the M.O.H. for Newcastle. He hoped to introduce legislation to effect a substantial improvement in the milk supply of this country. Sir George Renwick asked if the Minister would send a Government analyst to verify or refute the serious statements made. Sir A. Mond said he would be very pleased to do so.

Ex-service Blind Pensioners.—Mr. Macpherson stated, on May 4th, in reply to Mr. Gilbert, that there were approximately 1,550 blinded officers and men receiving pensions from his department. All had been either at St. Dunstan's or at Newington House, Edinburgh, where they had been trained in new occupations suitable to their conditions before returning to their homes. On their return the institutions mentioned continued to keep in touch with them through local representatives. These institutions were maintained out of private funds, and consequently the men had the advantage of receiving allowances at the maximum rate of pensions instead of the smaller allowances which would otherwise be payable.

Miners' Safety Lamps.—The question of the incidence of nystagmus was raised in a discussion on the motion for the second reading of the Coal Mines (Temporary Provisions of Safety Lamps) Bill on May 8th. Mr. Bridgeman, in asking the House to accept the measure, recalled that during the war the supply from Germany and Austria of glass for safety lamps for miners ceased, and the work had to be undertaken by British manufacturers. In the circumstances Mr. McKenna, on behalf of the Government, thought it right to guarantee to them that their trade should be maintained for them, even after the ending of the war. The present bill was to make amply secure the fulfilment of its pledge. Mr. Adamson, for the Labour party, expressed doubt whether the British-made glasses fulfilled requirements, and wanted to know whether the increase in nystagmus could be traced to their use. Mr. Hopkinson suggested that spread of picture palaces had more to do with the disease than any miner's lamp invented. Mr. Bridgeman said he should not have introduced the bill if he had not been satisfied by severe tests that the lamp was effective. Sir Donald Maclean, however, suggested an adjournment in order to allow miners' representatives to consider the matter, and after some more discussion Mr. Bridgeman agreed to an adjournment.

Workmen's Compensation.—The Home Secretary, on May 3rd, accepted a motion by Mr. Walter Smith that in view of the unsatisfactory state of the law relating to workmen's compensation, and of the fact that the War Addition Acts expire at the end of the year, a Government bill to amend the Workmen's Compensation Act, 1916, should be introduced and passed during the course of this session. Mr. Shortt expressed the hope that after a round table conference the Government may be able to introduce a measure which will have the support of the great majority of both Houses. He said that either this must be done or the War Addition Acts must be included in the Expiring Law Continuance Act at the end of the session. Otherwise workmen would be limited under the old statute to £1 a week compensation, and the capital grant in the case of death would be only £300.

Answers in Brief.

Sir M. Barlow stated, on May 3rd, that female professional nurses for the sick were, as from July 1st next, excluded from unemployment insurance by the Act. Full details of the effect of this provision in particular cases should be submitted to the department for consideration.

Sir A. Mond has stated that the numbers of notifications of and deaths from tuberculosis in 1919 and 1920 in England and Wales were considerably less than in any previous year.

In reply to a question on May 3rd as to five deaths from starvation reported to have occurred in the county of Durham in 1920, Sir A. Mond said he was obtaining a special report. In 1920 the number of deaths from starvation or exposure in London was four, and in the provinces as a whole twenty-eight.

Mr. Macpherson states that there will be no alteration in the rates of ex-service pension and allowance specified in the second schedule in the Royal Warrant before April 1st, 1923, and then only in accordance with the cost of living for the year 1922 as compared with the year 1919. He regrets to find that in some forms which have been issued the date April 1st, 1923, has been incorrectly printed as April 1st, 1922. All possible steps have been taken to correct this error.

A sum of £130,000 has been provided in the Estimates for 1922-23 to meet losses which may be incurred by local authorities in carrying out approved schemes for dealing with unhealthy areas. Such schemes have been put forward, or are under consideration, by a number of the larger local authorities, including the London County Council and the town councils of Manchester, Liverpool, Sheffield, Bristol, Leeds, Nottingham, and Exeter.

The Government intends to continue the system of State liquor trading in Carlisle, but not to extend it to other places at present.

INCOME TAX.

EFFECT OF BUDGET PROPOSALS ON INCOME TAX PAYABLE.

THE following table has been calculated from the data contained in the Budget. It covers a range of incomes from £500 to £2,000, and distinguishes between (*a*) incomes wholly earned and incomes derived half from earnings and half from investments; and (*b*) between an unmarried person and a married couple with two children:

Incomes Wholly "Earned."

Income.	Single Persons.			Married Couples with Two Children.		
	1921-22.	1922-23.	Decrease.	1921-22.	1922-23.	Decrease.
£	£	£	£	£	£	£
500	61	51	10	24	20	4
750	128	107	21	82	68	14
1,000	196	163	33	150	125	25
1,250	263	219	44	217	181	36
1,500	331	276	55	285	238	47
2,000	466	338	78	420	350	70
Incomes Half "Earned" and Half from Investments.						
500	68	57	11	28	23	5
750	140	117	23	94	78	16
1,000	211	176	35	165	138	27
1,250	282	235	47	236	197	39
1,500	353	294	59	307	256	51
2,000	496	413	83	450	375	75

Amounts calculated to nearest £.

The tables promised by the Financial Secretary to the Treasury to illustrate the effective rates of income tax (including super-tax) under the proposals of the Chancellor of

the Exchequer for 1922–23 have been issued by the Stationery Office in a White Paper, which can be purchased through any bookseller or direct from the Stationery Office, price 2d. net. (Cmd. 1652.) The White Paper contains three tables, the first applying to single persons, the second to married couples without children, and the third to married couples entitled to the allowance for three children. In each table the amounts and effective rates on earned and investment incomes are given and compared with the amounts and rates for 1921–22.

THE LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

THE annual general meeting of the London and Counties Medical Protection Society, Limited, was held at 12, Stratford Place, London, on May 3rd, when Sir JOHN ROSE BRADFORD, the President, occupied the chair. The annual report of the Council showed that the society, now entering on its thirtieth year, has made steady progress in all directions. During 1921 the number of fresh applications from members asking for advice and assistance was 465, and in the great majority of cases satisfactory results were obtained without recourse to litigation; the results in cases which did proceed to litigation were also, in the main, quite satisfactory. The surplus of income over expenditure in 1921 was £3,331, and the total surplus funds of the society amounted to close upon £30,000, while the total financial resources, including the amount reinsured with underwriters and the amount available by call on members, were nearly double this cash surplus. The number of new members elected during the year was 494.

Sir JOHN ROSE BRADFORD, in moving the adoption of the report, said that the amount of legal work during the year had been considerable, especially in respect to the cases which had been privately settled. This private settlement of cases was likely to be developed further. As they all knew, there was another society with similar objects and aims to their own, engaged in the work of medical defence, and as a result of communications between the two bodies it had been agreed that in the cases where one society was representing one individual and the other society another individual there should be a conference between the two societies before any actual legal proceedings were taken. There was something very obnoxious and unpleasant in the idea of one society of this kind representing one side of the case in court and a similar society representing the other side.

Dr. C. M. FEGEN, the Treasurer, seconded the adoption of the report, and said that the total membership of the society was now over 6,000. The financial resources were such that in the very improbable event of the society going into voluntary liquidation there would be a share-out of £5 a head, equal to five years' subscriptions. He remarked upon the excellent way in which the society was served by its permanent officers and staff.

The report was adopted unanimously, and it was also agreed, without dissent, to increase the amount available for the remuneration of members of Council for attendance at the meetings. In view of the appointment of a legal advisory committee which sits twice a month it was felt that attendance at this committee should be subject to the same recompense as attendance at the Council; accordingly the sum of 500 guineas was allocated for the remuneration of the directors.

Sir John Rose Bradford was re-elected President with acclamation, and the Vice-Presidents and members of Council retiring by rotation were re-elected, save that Dr. Owen Fowler, who has been a member of Council, was made a Vice-President, and Dr. Matthew W. B. Oliver elected on to the Council in his stead. Dr. Fegen was re-elected Treasurer, and Dr. Hugh Woods and Mr. A. G. R. Foulerton General and Financial Secretaries respectively, with expressions of appreciation for their past services.

THE seventh centenary of the University of Padua will be celebrated from May 14th to 17th. On May 14th the reception of the Italian and foreign representatives will take place at the University. On May 15th a grand ceremonial will be held in the Hall of Reason, and there will be a musical evening at the Verdi Theatre. On May 16th honorary degrees will be conferred in the hall of the University, and a banquet will be given by the municipality on May 17th. Other ceremonies and fêtes will be held at Venice.

Scotland.

VENEREAL DISEASE IN SCOTLAND.

A CONFERENCE of representatives of social organizations on the subject of venereal disease was held at Dundee on April 26th, with Dr. J. McGregor Robertson, chairman of the Scottish Committee of the National Council for Combating Venereal Diseases, in the chair. Sir Leslie Mackenzie delivered an address on the prevalence of venereal disease in Scotland. The data, he said, were so inadequate that there was no simple statistical way of conveying to the lay worker how much or how little venereal disease existed in any community. With the medical man there was no difficulty, for if he was not always on the look-out for the presence of the effects of syphilis in hospital or in private practice it would not be long before he had cause to regret his want of alertness. The exact number of patients affected mattered less to him than that he should always be on the alert to make a correct diagnosis. From such information as was available the Royal Commission which reported in 1916 came to the conclusion that the number of persons infected with syphilis, acquired or congenital, could not fall below 10 per cent. of the whole population in the large cities, and the percentage infected with gonorrhoea greatly exceeded this number. If the figures of deaths from syphilis in Scotland, for the ten years 1910–19 inclusive, were taken, a total of 1,984 deaths was found, an average of nearly 200 a year; but when the details were examined it was found that the vast majority of those who so died were children under one year suffering from congenital syphilis. Sir Leslie Mackenzie pointed out that general paralysis of the insane caused 2,520 deaths in ten years, an average of 252 per annum, and if it were assumed that in every hundred syphilitic persons three died of general paralysis of the insane, then 252 such deaths in Scotland would represent 8,400 persons affected with syphilis. As a provisional figure he put it that there were 9,000 new cases of syphilis every year in Scotland. He knew of no reliable index to the number of persons suffering from gonorrhoea, and all that could safely be said was that the number of such cases must be much greater than the number of syphilitics. Referring to the clinical reports made to the Scottish Board of Health for 1921, he observed that the new cases of all forms of venereal disease for the whole of Scotland were 13,676 in number, but if private practice were included as well as the official clinics there might be at least double that number. As compared with 1920, the figures for 1921 showed no great increase of cases, but they showed a great increase in the number of attendances, which meant that the work of the clinics was becoming better understood and appreciated.

DIFFICULTIES IN MEDICAL EDUCATION.

At a well-attended meeting of the Glasgow Medical Lunch Club, held on May 4th, and presided over by Dr. Charles F. Robertson, Professor Ralph Stockman was the guest of honour, and gave an address on the medical curriculum of the present day. He pointed out some of the difficulties in the way of an efficient medical education from the point of view of the student, and also those with which the teacher had to contend. He made particular reference, as was natural, to the teaching of clinical medicine and therapeutics. The two greatest difficulties at present were the overcrowding of the curriculum and of the classes, more especially those on the clinical side. The former difficulty was to a large extent the result of the gradual addition of special classes, attendance on which was now compulsory for purposes of qualification. This matter was at present receiving attention and consideration at the hands of the General Medical Council. The overcrowding of classes was a temporary difficulty which, so far as could be seen, would right itself within the next few years. Dr. Stockman's remarks were received with much attention, and the thanks of the members were voiced by Dr. James Hamilton. It was decided to hold the next meeting on June 8th.

EVOLUTION OF THE HUMAN INTELLECT.

The Morison lectures were delivered in the hall of the Royal College of Physicians, Edinburgh, on May 1st, 3rd, and 5th, by Professor G. Elliot Smith, F.R.S., of University College, London, on the subject of "The evolution of the

human intellect." He said that it was now half a century since the serious discussion of man's origin began, but during all that time there had been a strong reluctance on the part of the scientific investigators to attack the essential problem —how the human family came to acquire its chief distinction, the intellectual supremacy that differentiates man from all other living creatures. In 1859 Charles Darwin recognized the crucial importance of this problem; but since then it had been almost wholly ignored. Important discoveries of fossil apes, and equally significant researches in comparative anatomy had within recent years definitely established the main lines of the pedigrees of the human family right back to the dawn of the Tertiary period. This knowledge afforded a sure foundation upon which to base inquiries as to the nature of the factors responsible for each stage of progress from an insignificant and very primitive mammal like a jumping shrew, through the lemurs, lemuroids like the tarsier of Borneo and Java, the monkeys and the tailless apes, up to the ancestors of man himself. The essential factor in initiating this far-reaching process of intellectual development was the special cultivation of vision by a simple generalized arboreal animal. If the fuller cultivation of the sense of sight was the primary factor in differentiating the lemur from other mammals, it was the acquisition of stereoscopic vision that transformed one of the lemuroid group into an ape and determined the course of evolution of brain and mind which eventually brought about emergence of the distinctive characteristics of the human family.

The survival of the diminutive lemuroid Tarsius practically unchanged from the dawn of the Tertiary period was a particularly fortunate circumstance for the student of man's evolution. In the little tarsier itself stereoscopic vision had not been acquired, and special interest attached to this "living fossil" mainly because it just failed to attain the simian status. Its eyes were brought from the sides to the front of the head so that the animal was able to look forward both in the actual and the metaphorical sense of the word. The visual fields overlapped so that the images of the same object were impressed upon both eyes, and the range of co-ordinated movements of the eyes was increased by the dwindling of the nose and the flattening of the face. In Tarsius, for the first time among man's ancestors, sight definitely superseded smell as the dominant sense. In the course of transformation into the ape a complicated mechanism was built up in the brain, and there was a rearrangement of the optic fibres and a development of a particularly sensitive spot in each retina; these changes enabled the animal for the first time to see the world around it in the sense that we attach to the word "seeing," and it was able to appreciate form and size, colour and texture, and position in space in a way not possible before. The focussing of the two eyes for the examination of an object represented the germ of attention and those powers of concentration that were essential for the growth of the mind. The acquisition of stereoscopic vision proved, therefore, a powerful stimulus for every part of the cerebral cortex, and the new meaning which things and events thus acquired enormously enhanced the biological value of the sense of hearing. The brains of the most primitive monkeys revealed a great extension in the area primarily concerned with hearing and a noteworthy increase in the skilled use of the voice to emit sounds. The growth of sensory discrimination and the continued development of skilled movements eventually gave an ape the experimental knowledge and understanding to devise and the muscular skill to use a complex acoustic symbolism as a means of communication with its fellows. Examination of the cranial casts of the Ape Man of Java and the Dawn Man of Piltdown revealed a precocious expansion of the part of the brain concerned with the appreciation of such auditory symbolism. This fact suggested that the acquisition of articulate speech was an essential factor in the transformation of an ape into a human being. The endocranial casts of the extinct types of mankind revealed the fact that this process of development was not completed when the human family came into existence. In the lowlier types of man the parts of the brain that were ill developed were those that were concerned with attention, the finer sensory discrimination, and the more delicate manipulations. In the gradual expansion and filling out of the parietal, pre-frontal, and inferior temporal areas in the cerebrum, there was a hint of how the growth of man's brain and the acquisition of his distinctive intellectual powers had been effected.

England and Wales.

MEETING OF THE ASSOCIATION OF SURGEONS AT LEEDS.

THE third annual meeting of the Association of Surgeons of Great Britain and Ireland was held in Leeds on May 4th, 5th, and 6th, and proved a great success. Out of a membership of 250, the attendance book was signed by no fewer than 181. Immediately before the meetings began on Thursday morning a graduation ceremony was held by the University for the conferring of the honorary degree of D.Sc. on Sir Harold Stiles, the retiring President, and a considerable number of the members of the association were present. The congregation of the University is mentioned elsewhere.

Sir Berkeley Moynihan was installed as President by Sir Harold Stiles, who vacated the chair. The three opening discourses were upon the subject of cholelithiasis. These were given by the President, by Sir Gilbert Barling, and by Mr. James Sherren, and were respectively on "The early symptoms and signs of gall stones," "The association of gall stones and pancreatitis," and "Cholecystotomy or cholecystectomy?" An adjournment of ten minutes took place before the discussion on these three addresses. On Friday morning short addresses were given by Mr. A. J. Coupland, who spoke on the surgery of the parathyroids; by Mr. R. Milne, whose subject was that of operations on the spine for tuberculous disease; and by Mr. Lockhart-Mummery, who dealt with a new method of treating ischio-rectal abscesses. On Thursday and Friday afternoons operations were witnessed in the new theatres of the General Infirmary. On Saturday morning demonstrations were given in one of the wards of the infirmary, at the medical school, and in St. George's House, the annexe to the pathological department. The dinner of the society was held at the Queen's Hotel, and was attended by 131 members and guests. The only speeches besides the two words which were used in proposing the toast of "The King" were that of Sir George Makins, who proposed the health of the President, and Sir Berkeley Moynihan's reply. Both speeches were of the highest standard. Sir George Makins carried his audience with him when, passing lightly over that with which every member of his audience was well acquainted—namely, Sir Berkeley Moynihan's eminence as a surgeon—he referred in felicitous terms to his tact, to his enthusiasm, to that which was his greatest characteristic, his success in bringing men together and promoting good fellowship.

The writer of these lines, himself a mere physician, begs to offer his cordial congratulations to the surgeons on the successful launching of this society. It is the first few years of a new society that leave their mark, and it cannot be said to be fairly launched till some time after its first meeting. Like Kipling's ship, it has to find itself, and this it is clear the Association of Surgeons has done.

LEEDS GENERAL INFIRMARY.

Consequent on the appointment of Mr. S. Daw as surgeon in charge of the orthopaedic department, which has been recently instituted, a vacancy has been created in the assistant staff. To this position Mr. E. R. Flint, F.R.C.S., has been appointed by the special election committee. Mr. Flint was a Leeds student, and for some years was resident surgical officer at the infirmary.

THE Governor of Illinois, U.S.A., has appointed a committee of medical men to investigate alleged irregularities relative to the issuing of licences and certificates by the State Department of Registration and Education.

THE eighteenth South African Medical Congress will be held this year at Johannesburg, from September 18th to 23rd. The presidents of the different Sections are as follows: Medicine, Dr. Aylmer Dumat; Surgery, Dr. E. C. Long; Obstetrics and Gynaecology, Dr. Bruce Bays; Public Health, Dr. J. J. Boyd; Special Subjects, Dr. H. Symonds. A new departure has been made by arranging that at general meetings a paper shall be read on a special subject, but of a character likely to render it of general interest. These papers will include such subjects as chronic rheumatism, gastric ulcer, malaria, sterility, injuries, and common diseases of the eye. The business meetings of the Congress will be held on the Monday and the Saturday, and the Sections on the Tuesday, Wednesday, Thursday, and Friday.

Correspondence.

BABIES' WEIGHTS.

SIR,—May I ask your courtesy in recording the fact, which may interest those of your readers who are concerned with infant welfare, that this laboratory has just issued two revised charts of babies' weights, one for males and one for females. They may be obtained from the Cambridge University Press, Fetter Lane.

The weights are those of a large number of babies of artisan parents, and were provided for us by the baby clinics of a large manufacturing town. They indicate (1) where the baby of given age and given weight stands among babies of that age, and further (2), on the basis of this weight, a prognosis of what its health will be at the end of its first year of life.

Of course, weight is not the only factor in the health of the baby, the correlation between health and weight being less than 0.5, but the charts will suffice to indicate all that can be learnt from the factor weight alone.

In the case of individual babies, it would be very useful to plot their weights on these charts, and so ascertain whether their grade is improving, and the prognosis bettering. This would be valuable when the baby belongs to a different social class.

Existing baby charts contain, I think, much less information, and that of a somewhat antiquated character.—I am, etc.,

KARL PEARSON.

Galton Laboratory, University of London, May 4th.

"ALASTRIM" OR "PARASMALLPOX."

SIR,—In the BRITISH MEDICAL JOURNAL of April 29th, 1922, Dr. J. Johnstone Jervis, Medical Officer of Health, Leeds, deplores the introduction into medical nomenclature of the word "alastrim," which he says is "supposed to signify small-pox of a mild type." He goes on to say:

> "Already the use of this silly word is beginning to cause confusion in the lay mind, and as it is quite superfluous I would earnestly appeal for its utter banishment."

The point raised by Dr. Jervis is one of considerable practical importance, about which we are likely to hear a good deal more in the near future. Confusion on this matter is unfortunately not confined to the lay mind. Many medical minds have not yet grasped the fact that alastrim is not "small-pox of a mild type," but a separate entity distinguishable clinically from chicken-pox on the one hand and from small-pox on the other.

The present position with regard to small-pox and alastrim presents a striking analogy to the position in the early days of the war with regard to typhoid and paratyphoid fevers, when paratyphoid fever was regarded by some observers as "typhoid fever modified by inoculation." Paratyphoid fever is a distinct disease resembling typhoid fever in its clinical manifestations, but generally milder in its course and having a case mortality of 2 per cent. or less instead of the case mortality of 10 per cent. or more in typhoid fever. So in the case of alastrim we have a disease resembling small-pox in its clinical manifestations but generally milder in its course, with a case mortality of 1 per cent. or less as against 20 per cent. or more in the case of small-pox.

Where the analogy breaks down is in regard to immunology. Inoculation against typhoid fever produces no immunity against paratyphoid fever, but it would appear that vaccination against small-pox produces immunity against alastrim. This can be explained on the hypothesis that the viruses of small-pox and alastrim each contain two antigens, one of which is common and capable of producing immunity to both diseases.

If "alastrim" (synonyms amaas, milk-pox, Kaffir-pox, etc.) is a disease separate and distinct from small-pox, it should have a distinctive name. If "alastrim" or "amaas" are unsuitable names, why not call it "parasmallpox"? No useful purpose can be served by pretending that it is small-pox. It might be suggested that to call it small-pox would induce people in the areas where the disease is epidemic to submit to vaccination. That subterfuge might, however, defeat its own object—for the antivaccinators would naturally retort, "If small-pox has lost its power to kill and disfigure its victims, why trouble about getting vaccinated against it?"—I am, etc.,

R. P. GARROW,
Medical Officer of Health.

Chesterfield, May 6th.

"THE COMPOSITION OF SCIENTIFIC PAPERS."

SIR,—In your issue of April 29th (p. 691) you are good enough to commend a small book of mine on the *Composition of Scientific Papers*. The second edition was exhausted before the war, and since that time delays have been manifold. Inquiries for a new edition have been pouring in from many sides, and I am now engaged on a revision of this handbook, which I hope Messrs. Macmillan will be able to republish in a few weeks.—I am, etc.,

CLIFFORD ALLBUTT.

Cambridge, May 3rd.

THE GENERAL PRACTITIONER AND THE HOSPITALS REPORT.

SIR,—After reading the report on the organization of voluntary hospitals and the correspondence thereon a sincere doubt arises as to whether the general practitioner realizes the effect this policy will have on his practice. The report is on voluntary hospitals, but no definition of the word "voluntary" is attempted; in fact, it is deliberately evaded. It is evident, however, that the hospitals have now ceased to be what they were originally—namely, charitable institutions. In addition to the free (indigent) or charity patient they may now admit two groups—namely, the tariff and the private patient. I hold no brief for nursing homes, but I should think the proprietors of these homes will have some objection to the competition of hospitals in their business. I am more concerned with the group of tariff patients, which includes—

> "All those paid for by Public Authorities, Approved Societies, Employers of Labour, Insurance Companies or other bodies or under any contributory scheme" (para. 19 (*c*)).
>
> "Payments made for Tariff In-patients should be for work done based upon a tariff of fees agreed upon from time to time *by the contracting parties*" (para. 22 (*a*)).

It is quite clear under these provisions (1) that hospitals through their governing boards may now make contracts with any person or body of persons; (2) that this contract includes the provision of treatment; (3) that the contract may be made without consulting the medical staff, or the local profession as represented by the British Medical Association. This is contract practice with a vengeance! A few weeks ago we were trying to impress the Minister of Health that we could not under any circumstance discuss terms of service with approved societies. Now we have gone to the other extreme, and allow lay boards to arrange our fees for us with anyone or everyone. Such contracts being made, it is certain (whatever pious resolutions may be passed to the contrary) that individuals who contribute to the tariff system will now claim hospital benefit as a right, and hospitals will be compelled, and will find it to their interests, to provide accommodation for them.

Apart from an income limit, the efficacy of which is open to grave doubt, the only condition which has to be observed in the admission of patients is that the case "should be a suitable one for hospital treatment." Is it forgotten that very many cases suitable for hospital treatment are equally suitable for home treatment? It may be news to the Hospitals Committee that a fair proportion of the income of a general practitioner is derived from operations and other treatment now provided by hospitals, but in face of hospital competition what chance will he now stand of obtaining this private work? It is beside the question to say that "no tariff patient should be admitted without the recommendation of a private practitioner." If a patient has a title to hospital benefit his private attendant will find some difficulty in persuading him to have the treatment at home.

It is inconceivable that the British Medical Association should formally approve of a scheme of contract practice which will do so much harm to private practice, both general and consultant; but assuming for a moment that it does, it is not too much to expect that it will apply to it the same principles for which we fought so strenuously in 1911. These were mainly three:

1. No negotiation with societies.
2. Adequate remuneration.
3. Free choice of doctor.

With the first point I have already dealt, but in regard to adequate remuneration is it seriously asserted that a man with an income from £250 to £350 a year cannot pay for hospital treatment apart from maintenance? I have said that private practitioners are now getting reasonable fees for home treatment, and I venture to state that under a scheme

of insurance a premium of 1s. to 2s. per annum would provide an ample sum out of which adequate fees for treatment could be paid. The question of free choice of doctor is admittedly difficult in large hospitals, though a panel system is not impossible, but in the smaller towns the hospitals are staffed by general practitioners. What reasonable objection could be advanced in the latter case to allowing outside practitioners to treat their own patients in the local hospital if they so desired? Already they have to submit to their patients being treated by men who are possibly in keen competition with them, but if to this is added the loss of an appreciable source of income they may well condemn the hospitals. Let us hope that the Representative Meeting will come to the rescue of the profession in time.—I am, etc.,

Bury, May 4th. J. C. TURNBULL.

SIGHT-TESTING OPTICIANS AND PRESBYOPIA.

SIR,—In the *Bristol Medico-Chirurgical Journal* for December, 1921, appears an article by Mr. Cyril H. Walker, entitled "Some phases of quackery in relation to diseases of the eye." In alluding to the question of sight-testing by opticians he expresses an opinion which should not be allowed to pass unchallenged. Mr. Walker states:

"Indeed, it seems obvious that a certain amount of testing for spectacles cannot be objected to. Why should not a presbyope of 50 buy a pair of spectacles without consulting a doctor, just as he would buy a pocket magnifying glass, or any of the appliances which mitigate the disabilities of advancing years? Presbyopia is not yet a notifiable disease, in fact it is hardly a disease at all. Neither the public nor the profession is likely to suffer much at the hands of the sight-testing optician, provided he knows his trade and is honest. But the possibility of his overlooking glaucoma, optic neuritis, or other eye diseases is considerable. The public should be warned of this and have the opportunity of getting proper advice at a cost that is within their means."

In fairness to Mr. Walker I have quoted his remarks at some length, and it should be added that he goes on to urge a State medical service ensuring the provision of a sufficient number of well-staffed and properly equipped ophthalmic clinics where the public may have the opportunity, as he has stated, of getting proper advice at a cost that is within their means.

What I take exception to is his query, "Why should not a presbyope of 50 buy a pair of spectacles without consulting a doctor, etc.?" In my opinion the management of presbyopia is a question that in the past has received too little attention, not only on the part of medical practitioners in general, but even of a considerable number of ophthalmic surgeons of standing. It is a common experience to observe ophthalmic surgeons spending much time and trouble in estimating the static refraction of a patient, and then, inquiring his or her age, making an addition of an arbitrary amount for near work. The correction of presbyopia too long has been a matter of mere rule of thumb. The average sight-testing optician, as often as not, does not worry to estimate first of all the static refraction; indeed he has not the time and very often not sufficient skill to do this. Rather does it happen that a selection of reading glasses is offered to the customer, and it is the latter who makes the final choice. In my experience the patient who has bought a pair of spectacles for near work from an optician invariably is using too strong a pair. The result is to cause undue approximation of the artificial near point, thus throwing uncalled-for strain on the muscles of convergence which ultimately leads with advancing years to marked deficiency of convergence power and resultant difficulty in maintaining a reasonable reading distance. A considerable proportion of one's patients above the age of 60 who complain of inability to read for long are found to suffer from convergence deficiency, which in my opinion at least is attributable to the habitual use of too strong reading glasses dating back to the time of onset of presbyopia.

The correction of presbyopia is not to be treated lightly. Time and exactitude in detail are demanded from the ophthalmic surgeon, whose duty it is to examine carefully and treat every case on its merits. The static refraction must be determined, muscle balance investigated, and power of accommodation carefully estimated before any attempt to prescribe glasses is made. With these data before him the surgeon should ascertain at what distance the patient desires to read or work, taking into account his height, length of arms, and habitual posture, and then, and then only, work out the required correction. Apart from the question of overlooking diseased conditions, such as glaucoma, etc., I maintain that far more harm than good is done by the average optician.

Mr. Ernest Clarke, in a recent article, states: "My long experience has taught me that the correct treatment of presbyopia is one of the most important duties of the oculist. We are dealing with patients who are arriving, or who have arrived, at a critical period of life." Bearing this in mind, it behoves every medical man who has the welfare of his patients at heart to advise them, if they possibly can, to consult an ophthalmic surgeon when the stage of presbyopia is reached, and not to look upon the matter in the light of buying a pair of binoculars.—I am, etc.,

Cape Town, March 29th. ALAN W. SICHEL.

MEDICAL OBSERVATIONS IN ALBANIA.

SIR,—During a recent discussion before the Royal Society of Medicine reference was made to the work of Colonel McCarrison in the Himalayas, where he found an absence of several of our most prevalent diseases.

In this connexion it may be worth while to record our experience in Albania. During the past year I examined, operated on, treated, or prescribed for, 20,133 patients who attended the Ambulance of the White Cross at Scutari. The negative findings were no less interesting than the positive. There was one case of carcinoma. Among this large number of patients I found no case of appendicitis, no case of hypertrophied tonsils or turbinates, and no case of adenoids.—I am, etc.,

FRED. E. BURNHAM,
Scutari, Albania, April 16th. Brigadier-General.

VACCINES IN WHOOPING-COUGH.

SIR,—The interesting paper by Drs. Paterson and Smellie (BRITISH MEDICAL JOURNAL, May 6th, p. 713) bears out the experience I have obtained with vaccines, that they are valueless as curative agents in whooping-cough. As prophylactics they are practically infallible; but the larger doses of 2,000 million must be injected at two days' interval, before the seventh day of contact. One can then almost guarantee that the patient (child or adult) will not suffer from the disease.

As a curative agent we have nothing better than intramuscular injections of ether, 2 c.cm. every other day for babies and 3 c.cm. for children 4 years of age and onwards. Three or four injections should suffice. It is wonderful the influence it has over the established disease—spasms, vomiting, etc., ceasing sometimes spontaneously.

The diagnosis of whooping-cough is very simple for those who know how to do a simple white blood count.—I am, etc.,

Bognor, May 8th. JULES F. REY.

SUN OR AIR?

SIR,—Under the above heading Dr. A. C. Devereux, in the BRITISH MEDICAL JOURNAL of March 18th (p. 456), referring to the relative values of sunlight and open air, concludes: "The cooling power stimulates metabolism and cures disease. It doesn't matter a great deal whether the sun is shining or not." May I mention an experience regarding their relative values? During the epidemic of diphtheria in the Orange Free State during 1890–91 I had many cases of the disease under my care, and when possible I had them put in the open air under a white tent, or in the room of the house most exposed to the sun. I found this a great aid to recovery. During damp, cloudy weather improvement was distinctly retarded. So marked was the value of bright, sunny days that I concluded that the sun's rays had the power of aiding in the destruction or elimination of the toxins of the disease. While in Britain in 1892 I tried to get some explanation of this seemingly beneficial action of sunlight in these cases, but failed to do so.

My experience, therefore, was that the sun's rays had in these cases a value additional to that of open air and independent of it.—I am, etc.,

Clocolan, O.F.S., April 13th. B. G. BROCK.

REDUCTION OF MEDICAL FEES.

SIR,—I am sorry to read in his letter of April 9th that Dr. Ellis did not intend his previous letter, published on April 1st, for a joke. Since this is the case I am pleased that he admits I have voiced a grievance, but I do not agree that most of my facts were beside the mark.

I gathered from Dr. Ellis's original letter that when the cost of living was at high-water mark, fees were increased 50 per cent.; and since the cost of living is commencing to

fall he wishes us to reduce our fees. I tried to show reasons why we should not reduce our fees yet—namely:

1. The cost of living is still more than 50 per cent. above the pre-war cost.
2. Pre-war fees in many cases possibly may not have been just recompense, when the conditions which we have to fulfil are considered.
3. There is now a class of men in the profession who deserve a little consideration from their senior colleagues.

The fact which Dr. Ellis seems to fail to grasp is that although the cost of living is well above 50 per cent. more than pre-war cost of living, fees are simply 50 per cent. above pre-war fees.

I know nothing of the type of practice run by those who feel they ought to agitate for smaller fees, but I am writing simply from the point of view of a panel practitioner with his minimum fee of 2s. 6d. a visit and 3s. 6d. a bottle of medicine (℥viii) in his private practice. I have seen non-panel, non-dispensing practices with a minimum of something like 7s. 6d. a visit, but popular practitioners who can hold fashionable practices of that sort can adjust their fees to what they know they can command without writing to the JOURNAL. There are only two or three of these practitioners to scores of the less fortunate, and are not many of their patients drawn from a class who would scorn to have seen calling on them a man who was known to have a panel? Therefore need they fear the competition of their colleagues? I think not. It is time, however, that we members of the poorer paid majority commenced seriously to give our united consideration to the subject of fees. A little more enthusiasm must be shown or misunderstandings will arise and individuals may accept fees incompatible with the dignity of a professional man who has undergone a strenuous and costly training.

Regarding the reasons under heading No. 1—because we failed to raise our fees in proportion to the rise in the cost of living, and were so late in raising them the little we did, surely is no reason why we should be in so great a hurry to reduce them. Look also at the cost of running a practice now. Pre-war petrol 10d. a gallon, now 2s. 5d., lubricating oil similar, motor insurance premiums still rising, and, oh! the tax on a Ford car. These things also reduce our net income.

The reasons under No. 2 I shall pass over as stated in my letter of April 1st; but regarding those under No. 3 I would say: Now is the time a little practical sympathy is needed by those in this class who recently have bought practices at post-war valuation, to have their panel fees decreased, and then to find an agitation being set on foot to reduce their private fees. Should gross incomes be reduced to the pre-war figure, or even below the standard of the present cost of living before there are any reasonable grounds for it, the net incomes are going to be greatly diminished, since living and practice expenses are both at a higher percentage above pre-war figures than are the fees. However, the man who purchased or already possessed a practice in 1917 or early 1918 will not have these worries so acutely.

So far as a comparison with civil servants goes, they are not alone in receiving attention from the Government, for has not the panel fee been reduced? Panel practitioners receive no pension.

I quite agree that it would be dishonest to get a large fee under false pretences, so when the cost of living falls to 50 per cent. above pre-war costs, let us reconsider our fees in relation to the value of our services and our expenses. I suggest a minimum *not* lower than 2s. 6d. a visit and 3s. 6d. an 8-ounce bottle of medicine.—I am, etc.,

Standish, Lancs, April 25th. T. WILSON SHAW.

THE NAVAL MEDICAL SERVICE.

SIR,—Medical officers who joined the navy, as I did, in 1894, did so, according to an official Regulation that fleet surgeons—that is, surgeon commanders—would be compulsorily retired at the age of 55.

According to an Order in Council of July, 1919, I understand some 100 of these officers are being gradually compulsorily retired before this age and without any compensation. If this be so, it seems to me the Admiralty are perpetrating a gross injustice.

The majority of officers of this age may be expected to be married men with families; their pension is naturally much less than their full pay, and it is very difficult for them to get a job in our crowded profession. I understand it was authoritatively stated recently in the House of Commons that to summarily discharge regular officers who joined the service as a life profession would be contrary to all ideas of justice; how can this statement be reconciled with the present action of the Admiralty? I could enter with more detail into the question, but until their lordships show some disposition to consider it, it would be waste of my time and your valuable space.

As in times past, I feel sure the Naval Medical Service can rely on the help and sympathy of the British Medical Association.—I am, etc.,

Sevenoaks, April 16th. GERALD SICHEL.

*** Our correspondent cannot be aware that the British Medical Association, as recorded in our columns, has for some time past been in communication with the Admiralty on behalf of the senior surgeon commanders who were retired before the time anticipated when they joined the service. The Naval and Military Committee has pressed the Admiralty to reconsider this matter, and it is understood that a decision may be expected soon. A further statement will appear in the JOURNAL, when this can be done without prejudicing the position.

A STANDARD ENGLISH CATHETER GAUGE.

SIR,—The necessity for a standard English catheter gauge has been recognized for many years past, but the fact that the English catheter gauge has been so firmly established throughout the English-speaking world has hindered the adoption of any change. The gauge at present in use has generally been known as Weiss's gauge, and it appears to have been gradually built up by that firm from the early days of the last century, starting with one size (No. 8), smaller and larger sizes being added from time to time; but the gradation between the sizes has not been exactly uniform.

The difference between each size is based on sixty-fourths of an inch, but there is a deviation in two or three of the sizes. Other makers in producing gauges have also based them on sixty-fourths of an inch, but the deviations have not been in agreement with these on Weiss's gauge. Further, in the course of time some of the gauges in use have become worn, and there has been no generally adopted standard for remedying the variations.

This association has had the matter under consideration for some time, and has now adopted the new gauge, which shows very little deviation from the original gauge of Messrs. Weiss, but possesses the advantage of having an equal gradation between the sizes and a definite relation to the French gauge.

Dealing with the sizes in common use, No. 1 of the new gauge is equal to 1.5 mm. diameter, each size increasing by 0.5 mm. to No. 12, which equals 7 mm. diameter. There are two sizes smaller than No. 1—namely, No. 00 = 0.5 mm. diameter, and No. 0 = 1 mm. diameter; and with regard to the larger sizes No. 13 = 7.5 mm. diameter, each size above this increasing by 0.5 mm. diameter to No. 30, which equals 16 mm. diameter. The complete range runs from No. 00 to No. 30, with a uniform gradation of 0.5 mm. between each size, thus covering all the usual sizes for urethral instruments, the larger sizes serving also for oesophageal instruments.

Table showing Diameters in Millimetres.

No.	Diameter.	No.	Diameter.	No.	Diameter.
00	0.5 mm.	10	6.0 mm.	21	11.5 mm.
0	1.0 ,,	11	6.5 ,,	22	12.0 ,,
1	1.5 ,,	12	7.0 ,,	23	12.5 ,,
2	2.0 ,,	13	7.5 ,,	24	13.0 ,,
3	2.5 ,,	14	8.0 ,,	25	13.5 ,,
4	3.0 ,,	15	8.5 ,,	26	14.0 ,,
5	3.5 ,,	16	9.0 ,,	27	14.5 ,,
6	4.0 ,,	17	9.5 ,,	28	15.0 ,,
7	4.5 ,,	18	10.0 ,,	29	15.5 ,,
8	5.0 ,,	19	10.5 ,,	30	16.0 ,,
9	5.5 ,,	20	11.0 ,,		

—I am, etc.,

G. R. CHEESMAN,
Honorary Secretary, Surgical Instrument Manufacturers' Association.

London, E.C.1, May 1st.

SLIPPING RIB.

SIR,—In reference to the discussion on "slipping rib," may I point out that the tenth rib is not the only one that slips?

In patients complaining of neuralgic pain in the front of the chest I always examine the back, over the site of the heads of the ribs, and frequently find a tender spot on a rib

head corresponding to the site of the pain in front, and due to pressure from a twisted rib on the intercostal nerve at the back causing referred pain at the end of the nerve in front.

In such cases I get the patient to lie on the chest, and exercise a sudden sharp pressure over the head of the rib with the base of my hand, and often hear a click, meaning the reposition of the rib. Instantaneous disappearance of both pain and tenderness follows on this manœuvre, and the patient is much impressed with the rapid relief.—I am, etc.,

London, W., April 19th. H. FERGIE WOODS.

VAN DEN BERGH TEST IN JAUNDICE.

SIR,—An error has crept into my article on the use of the van den Bergh test in cases of jaundice, which was published in your issue of May 6th. The mistake occurred in the retyping of my own manuscript, and I regret that it escaped my notice. It concerns the making up of the standard solution of iron sulphocyanide for the colorimetric test. Two sentences have been mixed up and shortened into one; the first paragraph of the method of preparation should read:

"Dissolve 0.1508 gram of ammonium iron-alum in 50 c.cm. concentrated HCl, and add water to 100 c.cm. This gives a dilution of 1 in 320 normal, which keeps indefinitely. To 10 c.cm. of this solution add 25 c.cm. concentrated HCl, and water up to 250 c.cm. This gives a dilution of 1 in 8,000 normal, which will keep for about six months."

The account of the colorimetric method was given with great brevity, and those who intend to use it are again recommended to look up the full technical details as given by van den Bergh in the *Presse Médicale*, June 4th, 1921, and in his monograph. The serum tested is diluted both by the addition of alcohol and of the diazo reagent, and this dilution must of course be taken into account in estimating the number of "units" of bilirubin present in the serum.—I am, etc.,

University College Hospital, May 9th. J. W. MCNEE.

Obituary.

JAMES MIDDLEMASS, M.A., B.Sc., M.D., F.R.C.P.EDIN.,

Medical Superintendent, Sunderland Borough Mental Hospital.

THE death, on May 2nd, of Dr. James Middlemass is not only a serious loss to his own special sphere of psychological medicine but to the medical profession in general, for he took much interest in the affairs of the profession, was twice president of the Sunderland Division of the British Medical Association, and during the war was chairman of the Local Medical War Committee. His independent position gave him, perhaps, special advantages in dealing with medical problems, while his tact as a chairman and his ability to direct discussion and obtain a decision frequently proved of great value.

Dr. Middlemass, who was aged 59, was a native of Edinburgh. After taking the degrees of M.A. and B.Sc., he graduated M.B., C.M. (with honours) at Edinburgh University in 1886 and proceeded M.D. in 1898; he became F.R.C.P.Edin. in 1896. He studied also at Strasbourg and elsewhere abroad, and after a period as resident physician at the Edinburgh Royal Infirmary he became resident pathologist, and later assistant physician, to the Royal Edinburgh Asylum, Morningside. In 1898 he was appointed medical superintendent of Sunderland Borough Mental Hospital, Ryhope, and in 1918 he was appointed lecturer in psychological medicine at the College of Medicine, Newcastle. Dr. Middlemass married the sister of Dr. Elkins, his predecessor at the Sunderland Mental Hospital, and he is survived by his widow, a son, and a daughter; his son is a B.Sc. in agriculture of Edinburgh University and holds an appointment in Scotland.

Dr. BEDFORD PIERCE writes: Dr. Middlemass's illness was altogether unexpected; an attack of appendicitis occurred when on holiday, and septic troubles developed, so that several operations were necessary; he succumbed after a wearisome illness of over three months. On May 5th a remarkable memorial service was held at Ryhope parish church, attended by representatives of the Sunderland Corporation, large numbers of the medical profession, the staff of the Mental Hospital, and many others. It was a striking tribute of respect and affection. Dr. Middlemass wrote many articles to the medical journals, chiefly relating to pathology. Latterly he greatly assisted in preparing the *Handbook of Mental Nursing*, published by the Medico-Psychological Association. He was an active member of the committee now engaged in rewriting the *Handbook*, and though the names of the writers of the sections are not published, it may be said that Dr. Middlemass's assistance in this work, which is of such great importance to mental nurses and their patients, is recognized by the committee to be of the utmost value. In this way his personal influence will be felt by many generations of mental nurses yet to come. His lectures on mental disease at the Newcastle medical school were clear and impressive, and were most successful. In regard to his work at Sunderland the chairman of his committee has stated that he has never known an official in whose judgement they had so much confidence. He was beloved by his staff, who recognized his justice and his sympathy. Dr. Middlemass was essentially Scottish; he was quiet, cautious, and reserved, of very decided opinions, and possessed of deep religious convictions. He was a versatile man, proficient in modern languages, and he played the 'cello. Dr. Middlemass spent himself for others in no ordinary way, and "having served his generation faithfully, by the will of God, he fell asleep."

WE regret to record the death of Dr. C. SOMERTON CLARK, which took place in King's College Hospital on April 6th at the age of 46. He was born at Burgess Hill, Sussex, and educated at Dean Close School, Cheltenham. He graduated in Edinburgh as M.B., Ch.B. in 1899, became F.R.C.S. in 1901, and took the course at the London School of Tropical Medicine in the same year. He was house-surgeon to Hove Hospital 1899–1900. In 1902 he sailed for India to work in the Punjab Mission of the Church Missionary Society; he held positions successively at Srinagar, Amritsar, Dera Ismail Khan, and Quetta. He only took one furlough (in 1909), and in 1919 was invalided home with splenic leukaemia. The greater portion of his time had been spent in unhealthy stations on the plain, and one of his last suggestions was that a scheme should be introduced obviating the necessity of keeping men in the unhealthy stations for too long a period by a rotation system of transfers in their location. This was very characteristic of the man, who was always thinking and planning for other people, and the first to sacrifice himself for their benefit. He did much to bring the Dera Ismail Khan Hospital to a high state of efficiency, and the strain in that difficult and trying district may indeed have predisposed to the illness which he subsequently developed. He was always *persona grata* with his patients and beloved by little children. His sympathies were broad and his Christian influence wide-reaching. From time to time he contributed articles to medical and missionary periodicals, and he will long be remembered by a wide circle of friends in India and in England. For the past three years his health had been very seriously impaired, and he knew from the nature of his disease that there was little hope of improvement or recovery. Much sympathetic help and advice were received from the late Sir W. Osler and other eminent members of the profession, and nothing could have exceeded the kindness and skilful care with which he was treated at King's College Hospital. For many months remarkable results followed the use of *x* rays, and recently, when they ceased to be beneficial, radium was employed with advantage, but a febrile attack precipitated the end.

DR. SAMUEL JOHN BROOKS, who died in his 62nd year at Over Haddon, near Bakewell, on April 13th, was until October last in practice at Eyam, where he held the appointments of medical officer to the board of guardians and to the isolation hospital. He was the eldest son of the late Dr. R. W. T. Brooks, of Serjeant's Inn, and was educated at King's College School and King's College Hospital, London, where he studied under Lord Lister. He obtained the diplomas of M.R.C.S. and L.S.A. in 1885. Before he settled in Eyam he had practised for some time at Mossley, near Manchester, where he married the daughter of the late Dr. J. K. Seville. Dr. Brooks was well known as a lover of horses, and always carried on his practice with the assistance of one or two well-chosen animals, often of his own breeding. His death after a short period of retirement is mourned by a large circle of friends and old patients. He was an old member of the British Medical Association.

DR. ARTHUR EDWARD WILSON died suddenly at his residence at Sydenham on April 24th. He was educated at Boston Grammar School, and won an open scholarship in natural science at St. Mary's Hospital, London, where he

won a scholarship and graduated M.B.Lond. with honours in 1893. After practising in Boston for ten years he moved to Sydenham in 1913. While residing at Boston Dr. Wilson was honorary secretary to the Boston and Spalding Division of the British Medical Association, and surgeon to the Boston Hospital; he held a commission as captain in the R.A.M.C. (Territorial Army). He was a member of the Boston Rowing Club, and won the junior sculls in 1887. He is survived by his widow, two daughters, and one son.

DR. ALEC BOSWELL TIMMS, a famous Rugby international football player, died in a nursing home in London on May 5th, aged 50. He was educated at Edinburgh University and the College of Surgeons in that city, and took the Scottish triple qualification in 1903. He played centre three-quarter for Scotland in fourteen international matches—against England in 1901–2–3–4–5, against Wales in 1896 and in 1900–1–2–3, against Ireland in 1900–1–4–5, and was for some time captain of the Scottish fifteen. He also went to Australia in a British fifteen, and played for Cardiff. Before the war he was in practice in Wales, and latterly at Redhill.

Universities and Colleges.

UNIVERSITY OF LEEDS.

Conferment of the Honorary Degree of Doctor of Science on Sir Harold Stiles.

AT a congregation of the University of Leeds the degree of D.Sc. (*honoris causa*) was conferred upon Sir Harold Stiles by the Vice-Chancellor. In presenting Sir Harold for the degree Dr. Jamieson, the Dean of the Faculty of Medicine, said:

Mr. Vice-Chancellor,—In the ancient Greek there is an epitaph on a foreigner written by Simonides: "I, Brotachos of Gortyna, lie here, not having come for this, but on business." As a similar thought may be in the mind of Sir Harold Stiles, who has come here for the business of a meeting of the Association of Surgeons of Great Britain and Ireland, I must explain that we are adhering to a most ancient anthropological custom which requires an exchange of gifts when communities meet in friendship. This university desires to give substance to its welcome of the Association by conferring an honorary degree on the President before he demits office in favour of one of our own senators; the university receives a substantial return on acquiring a distinguished addition to its roll of graduates.

In this ceremony we endeavour also to compliment a great university which has long taken a foremost place in the propagation of the gospel of healing, and to congratulate her not only on the great names on her memorials but on the men who now labour within her walls, notably the Regius Professor of Clinical Surgery.

His chair is a solemn and inspiring seat, bemantled by noble traditions. His predecessors have been in turn—Francis Caird, a most learned and gentle surgeon; Thomas Annandale, a bold and dexterous pioneer; Joseph, Lord Lister, who is canonized in the hearts of all mankind; James Syme, that heroic figure whose proper place was on the field of Troy, where he would have changed the story of the Iliad by competent attention to the wound in the heel of Achilles; and Edward Russell, the first professor who fanned the torch in the darkest hour before the dawn of the bright surgical day which we enjoy.

But in this seat Sir Harold Stiles may sit in modesty but without diffidence by virtue of a capacity manifested in his position as Ettles scholar, the most distinguished graduate of his year—a position never lost; of a stream of contributions to surgical knowledge of a progressive and permanent nature; and of a great breadth of experience derived from service of the most active kind as surgeon to the Royal Hospital for Sick Children, the Chalmers Hospital, and the Royal Infirmary of Edinburgh.

Beginning with his early effort, when he made use of a well-known chemical reaction to make a considerable advance in the efficacy of the surgical treatment of malignant disease, his contributions to surgery have been characterized by faith in the value of the fundamental sciences as the basis of the art; and the energy with which he has pursued his ideals enables us to believe that his good intentions have not the proverbial unhappy fate; we may, on the contrary, imagine that they will pave a balcony from which his spirit—in, we hope, the very distant future—may contemplate with satisfaction the developments of that science and art whose foundations he has strengthened and decorated in his own solid and graceful manner.

None but those who have sat under him can value justly his greatest virtue—an impelling enthusiasm. In the late war he was a colonel, consulting surgeon to the Scottish Command, and is still a member of the Advisory Board, but the position suggests a reflection of a previous existence in which he must have been a great captain of horsemen. His voice is a battle cry, commanding and inspiring endeavour, and that alone fully justifies his present position.

We are happy in being able to greet this estimable man as a member of our university while his eye is undimmed and his natural force unabated, knowing full well that *his* heart will be in *our* body in all sincerity.

Mr. Vice-Chancellor, in the name of this Faculty and with the joy and pride of an old pupil, I present to you Sir Harold Jalland Stiles for the Degree of Doctor of Science (*honoris causa*).

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

A QUARTERLY meeting of the Royal College of Physicians of Edinburgh was held on May 2nd, when Sir Robert Philip, President, was in the chair. Dr. Alexander Gibson Henderson was admitted a Fellow of the College. Drs. George Williamson, Alan Leonard Smith Tuke, M.C., James Bertie Simpson, O.B.E., D.L., David Huskie, John Johnstone Wilson, William Edward Foggie, D.S.O., were admitted Members of the College. The Lister Fellowship of the value of £100 was awarded to Dr. Hedley Duncan Wright.

Sir Joseph Fayrer, Bt., on behalf of the officers of the 2nd Scottish General Hospital, presented to the College a silver bowl in commemoration of the services rendered by its Fellows during the great war. Dr. Thomas W. Dewar presented to the College an apothecary's balance which had been the property of Prince Charlie.

The College unanimously resolved to offer its Honorary Fellowship to Professor Albert Calmette of the Pasteur Institute, Paris, on account of his distinguished services to medical science.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—*Medicine:* L. Feldman, J. E. Overstead, L. I. Myerson, A. A. Dewar, A. K. Tateson, Agnes T. Martin, H. S. Menko, M. Witkin. *Surgery:* B. M'Laughlin, Lilian M. Williams. *Midwifery:* J. Waiggowsky, T. T. Hoskins, A. K. Tateson, A. A. Dewar, M. Witkin, H. G. Triay, L. Feldman, E. L. Ewan, Lilian M. Williams. *Medical Jurisprudence:* Wilhelmina C. Storrie, G. F. Maher, O. H. D. Oliver, J. M. M'Lintock, J. H. Murrell, R. R. Anderson, A. L. Tinto, S. A. D. Naoroji, R. M. MacKinnon, Annie D. Allan, K. Palit, A. Adefolu.

The following candidates, having passed the Final Examination, have been admitted L.R.C.P.Ed., L.R.C.S.Ed., and L.R.F.P.S.G.:

R. W. P. Hall, O. O. Popper, H. Camrass, A. J. Lubbe, T. K. Maclachlan, G. G. King, Marguerite M. I. Swanson, C. M. Thompson, D. Macdonald, W. M. Reid, W. R. Dupré, A. W. Buchan, W. A. M'K. Gibson, C. E. W. Mendis, Isobel Reid, F. P. Lisboa-Pinto, M. A. M'Vey, S. Ho Asjoe, C. T. Williams.

LONDON INTER-COLLEGIATE ENTRANCE SCHOLARSHIPS AND EXHIBITIONS, 1922.

FIFTEEN medical entrance scholarships and exhibitions of an aggregate total value of about £1,300, tenable in the Faculty of Medical Sciences of University College and King's College, and in the Medical Schools of Westminster Hospital, King's College Hospital, University College Hospital, the London (Royal Free Hospital) School of Medicine for Women, and the London Hospital, will be offered for competition on Tuesday, June 27th, 1922. Full particulars and entry forms may be obtained from the secretary of the board, S. C. Ranner, M.A., The Medical School, King's College Hospital, Denmark Hill, London, S.E. 5.

The Services.

DEATHS IN THE SERVICES.

SURGEON-GENERAL WILLIAM FRANCIS BURNETT, Army Medical Staff (retired), died at Richmond on April 24th, aged 76. He took the L.R.C.S.I. in 1864 and the L.R.C.S.Ed. in 1866, and entered the army as assistant surgeon on March 31st, 1866. As a young man he served in the 77th Foot (2nd Middlesex) and in the 68th Foot (Durham Light Infantry). He attained the rank of colonel in 1896, and that of surgeon-general in 1901; he retired in 1905, but was re-employed during the recent war (1915–16). He served in South Africa in the Zulu war of 1879 (medal with clasp); in the Afghan war of 1879–80 (medal; and in the Nile campaign of 1884–85 (medal with clasp, and Khedive's bronze star). His son, Captain Maurice Burnett, R.A.M.C., was killed in action at Shaiba in Mesopotamia on April 14th, 1915.

Colonel Francis Warburton Begbie, C.B.E., Army Medical Staff (retired), died at Exmouth, after a long illness, on April 25th, aged 57. He was the eldest son of the late Dr. James Warburton Begbie, and was born in Edinburgh on June 13th, 1864. He was educated at St. Bartholomew's Hospital, and took the M.R.C.S. and L.R.C.P.Lond. in 1890. He entered the army as surgeon-captain in July, 1891, became colonel in 1917, and retired on January 1st, 1920. He served on the North-West Frontier of India in the Chitral campaign of 1895 (medal with clasp), and throughout the South African war of 1899–1902, taking part in operations in Natal, the Transvaal, the Orange River Colony, and Cape Colony, including the actions of Colenso, Tugela Heights, Spion Kop, Vaal Krantz, Pieter's Hill, and the relief of Ladysmith; was mentioned in dispatches in the *London Gazette* of April 16th and November 15th, 1901, and received the Queen's medal with six clasps and the King's medal with two clasps. During the early part of the recent great war he was Commandant of the R.A.M.C. training centre at Ripon.

Medical News.

THE fourth lecture of the series on pathological research in its relation to medicine, arranged by the Institute of Pathology and Research, St. Mary's Hospital, Paddington, will be delivered on Thursday, May 18th, by Major-General Sir W. B. Leishman, F.R.S., who will speak on enteric fevers in the war. On May 25th Professor E. H. Starling, F.R.S., will discuss some new experiments on the kidney. Sir A. C. Houston will deal with the purification of water on June 1st, and Professor W. Bulloch, F.R.S., will discuss the historical development of the doctrine of croup and diphtheria on June 8th. The series will be brought to a close by a lecture on diverticula of the alimentary tract by Sir Berkeley Moynihan, to be given on June 15th. The lectures, which are given at 5 p.m., are open to all members of the medical profession, and to all students in medical schools, without fee.

THE next post-graduate lecture in the new series arranged by the Fellowship of Medicine will be given by Sir Thomas Horder at the house of the Royal Society of Medicine on Tuesday next, May 16th, at 5 p.m., on "The clinical significance of haemoptysis." The lecture is open to members of the profession. The course of six practical demonstrations on gastro-intestinal affections in children, skin diseases, the Wassermann reaction and its importance in general practice, will be given at the "Children's Clinic," Western General Dispensary, on Mondays and Thursdays, at 4.45 p.m., commencing on May 15th. The fee for the course is one guinea; application for copies of the syllabus and tickets should be made to the Secretary to the Fellowship of Medicine, 1, Wimpole Street, W.1.

AN interesting ceremony took place at the annual dinner of the Laryngological Section of the Royal Society of Medicine held on May 5th, when the Section was presented with a presidential badge by Sir William Milligan, M.D., President of the Section. The badge, which is the work of the Goldsmiths and Silversmiths Company, is in gold and enamel with a centre medallion representing the profile of Signor Manuel Garcia, the "Father of Laryngoscopy."

THE summer session of the West London Post-Graduate College, Hammersmith, opened on May 8th, and will continue until July 15th. There will be a lecture or demonstration every day except Saturdays at 5 p.m., and demonstrations will be given daily in the medical and surgical out-patient rooms and the specical departments at 2 p.m. Special demonstrations on the cases in the wards will be given by the physicians and surgeons, and a number of lectures and demonstrations on special subjects have been arranged. Particulars of the courses and special classes may be obtained from the dean of the college, Dr. Arthur Saunders. The fee for attendance on the hospital practice, including all ordinary lectures and demonstrations, is 4½ guineas for one month, 6 guineas for six weeks, or 9 guineas for three months.

DR. REDMOND ROCHE has been chosen as President of the Society of Members of the Royal College of Surgeons of England, in succession to Dr. J. Brindley-James, deceased.

A SPECIAL course of six lectures on advanced surgery will be given in the surgical unit of the London Hospital on Fridays at 4.15 p.m. in the clinical theatre. On May 12th and 19th Mr. Russell Howard will discuss acute intestinal obstruction, on May 26th Sir Hugh Digby will speak on carcinoma of the rectum, on June 2nd Mr. Robert Milne will deal with operative treatment of spinal caries, and on June 9th and 16th Mr. Hugh Lett will discuss haematuria and painful micturition respectively. The course is open to graduates and senior students.

AT a meeting of the Association of Economic Biologists to be held at 2.30 p.m. on Friday next, May 19th, at the Imperial College of Science, Professor J. H. Priestley of Leeds will give a demonstration of the toxic action of illuminating gas on plants.

THE annual summer dinner of the Glasgow University Club, London, takes place in the Trocadero on Friday, May 26th, at 7.15 for 7.30 p.m. precisely, Sir Archibald Denny, LL.D., in the chair. All Glasgow University men who wish to attend are requested to apply without delay to the honorary secretaries, 1, Harley Place, N.W.1.

THE next meeting of the Medico-Psychological Association of Great Britain and Ireland will take place on Thursday, May 25th, at 11 a.m., at 11, Chandos Street, Cavendish Square, and at 3 p.m. at the L.C.C. County Hall, Spring Gardens, under the presidency of Dr. C. H. Bond. Sir Frederick Mott will read a paper on the genetic origin of dementia praecox at 11.15 a.m., and Sir Maurice Craig will deliver the third Maudsley lecture at 3 p.m. on some aspects of education in relation to mental disorder.

THE Aberdeen University Club, London, will hold its bi-annual dinner on Thursday, May 18th, at Gatti's Restaurant, Strand. Dr. W. A. Milligan, the honorary secretary, 11, Upper Brook Street, W.1, will be pleased to hear from any members wishing to be present, and also from graduates (men or women) wishing to join the club.

A MEETING of the West Kent Medico-Chirurgical Society will be held at the Miller General Hospital, Greenwich, to-day (Friday, May 12th), at 8.45 p.m., when the President (Dr. Comber) will deliver his address, which will be followed by a smoking concert.

A CLINICAL meeting of the Harveian Society of London will be held on Thursday, May 18th, at 4.30 p.m., at the Paddington Infirmary, Harrow Road.

THE annual meeting of the Medical Mission Auxiliary of the Church Missionary Society was held in Queen's Hall, London, on May 3rd. Sir Leonard Rogers was in the chair, and addresses on the subject of foreign medical missionary work were given by Dr. Duncan Main (China), Dr. Emmeline Stuart (Persia), and Dr. R. B. Coleman (Egypt). The meeting was very well attended in spite of a wet evening.

DR. T. G. STYAN, on leaving Ramsgate, where he practised for 36 years, has been presented by his friends and patients with a silver tray, a cheque for £25, and an illuminated address.

WE are asked to state that an international conference on birth control will be held in London next July—11th to 14th. Friday, July 14th, will be devoted to the medical and contraceptive sections; the latter will be open only to medical practitioners and students. The fee for membership of the conference is 10s., but medical men and women can become honorary members by applying to Dr. B. Dunlop, 71, Harley Street, W.1. The Presidents of the sections are: Professor MacBride (eugenics), Professor J. M. Keynes (economics), Mr. Harold Cox (national and international aspects), the Rev. Gordon Lang (moral and religious aspects), Sir G. Archdall Reid (medical), Mr. Norman Haire (contraceptive).

THE Royal Institute of Public Health will hold its annual congress at Plymouth from May 31st to June 5th inclusive. It will be divided into four sections as follows: (1) State Medicine and Municipal Hygiene; (2) Naval, Military, and Air; (3) Bacteriology and Biochemistry; (4) Women and Public Health. The Harben lectures will be delivered by Professor T. Madsen of Copenhagen on June 1st, 2nd, and 5th, at 4.30 p.m. Lecture I will deal with specific and non-specific antitoxin formation, the second with antitoxic treatment of diphtheria, and the third with phagocytosis and temperature. The Mayor and Corporation will hold a reception at the Guildhall on Thursday, June 1st, at 7.30 p.m., and the National Temperance League are arranging a breakfast conference on Friday, June 2nd, at 8 a.m. The dinner of the congress will be held at the Royal Hotel on June 2nd, at 7 p.m. A series of visits and excursions have been arranged.

THE annual meeting of the American Congress of Internal Medicine and the College of Physicians was held at Rochester, Minn., in April. Changes have been made in the constitution and by-laws of the organization, which, according to the statement of Dr. Frank Smithies, secretary-general of the organization, will place the practice of internal medicine on the same ethical plane that surgery now enjoys in America through the efforts of the American College of Surgeons. A candidate for Fellowship of the American College of Physicians must be a graduate of a medical school of the first rank, a member in good standing of his local, state, or national medical societies, be a licentiate in the state wherein he resides, or engaged in practice or scientific research in a hospital or recognized institution; he must be at least 25 years of age and have received his qualifying diploma at least five years before becoming a Fellow; an applicant for membership must be engaged in teaching or research, in charge of a hospital of a hundred or more beds, or affiliated with medical or laboratory departments of the United States or Canadian army, navy, or public health services; in default of these attainments he must have submitted a clinical report on fifty patients who have been actually under his care.

A CONGRESS of mental hygiene, organized by the French League of Mental Hygiene, will be held in Paris at the Hôtel des Sociétés Savantes, 28, Rue Serpente, from June 1st to 4th. The subscription has been fixed at fr. 25 for members who take part in the discussions, and fr. 10 for associate members who take no active part in the work of the congress. The treasurer is Dr. Dupain, 1, Rue Cabanis, Paris.

WE greatly regret to announce, as we go to press, the death of Sir Henry Davy, K.B.E., C.B., consulting physician to the Royal Devon and Exeter Hospital, who was President of the British Medical Association at the Annual Meeting at Exeter in 1907.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

INCOME TAX.

"H. M. M." inquires as to his liability as an assistant.

*** (*a*) He is not liable to assessment in respect of the value of board and lodging received in kind. (*b*) "A present of £5 every Christmas" appears to be liable to assessment if it is received in consideration of services rendered—for example, if his principal is entitled to treat it as a professional expense.

"FOGGED" has a pension, and since making his income tax declaration for 1921–22 has taken up a temporary appointment with a county council, being paid according to work done.

*** Our correspondent is liable to payment of income tax on the amount of his additional earnings in the period to April 5th, 1922; it may save him some correspondence in the future if a supplementary statement is made through the Pensions Office or through the office of the local inspector of taxes, though he can probably leave the matter with the authorities on the assumption that it will be dealt with when the county council lodges its salary list with them.

"F. M. S." holds a post as medical officer to a private mental hospital, receiving a fixed salary and board and lodgings for his wife and himself.

*** Only the salary and other cash emoluments, if any, are assessable.

LETTERS, NOTES, ETC.

THE Registrar of the General Medical Council informs us that we were in error in supposing that the vacant site in Oxford Street, referred to in the paragraph headed "From Grave to Gay," on p. 491 of our issue of March 25th, was that formerly occupied by the house of the General Medical Council. The vacant space is No. 311, Oxford Street, whereas the house of the General Medical Council was 299. The correspondent who supplied us with the information was under the impression that the houses in that part of the street had been renumbered.

DR. ARBOUR STEPHENS (Swansea) asks for the opinion of readers as to whether a point half-way between the right acromion process and the left anterior superior iliac spine would be of value in correlation with the heart's impulse or apex beat. The average length in a man is, he says, about one inch longer than in a woman. Any marked deviation from the average is, Dr. Stephens thinks, significant.

VIENNA CLINICS.

DR. E. W. SCRIPTURE writes to supplement the information in his letter published on April 22nd, p. 661. He states that during the summer semester there will be over twenty courses in neurology and psychiatry in Vienna. At the Neurological Institute foreign doctors are charged 1,000 crowns for the course, with an additional laboratory tax of the same amount monthly. At the present rate of exchange this appears to be equivalent to about 6d. The clinic for neurology is conducted by Professor Wagner-Jauregg; among the courses there is one by Dr. Stransky, "Applied Psycho-pathology (Psycho-pathology in Daily Life, in Culture, and in the Life of Peoples)," and Dr. Schilder will give a series of psycho-analytic demonstrations. Our correspondent states that Professor Freud is no longer connected with the university, his entire time being devoted to private practice.

OPERATIONS FOR TONSILS AND ADENOIDS.

THE Secretary of the Belgrave Hospital for Children writes: With reference to the suggestions made by the Council of the Laryngological Section of the Royal Society of Medicine regarding the treatment of children suffering from tonsils and adenoids, a large number of children receive treatment for throat affections at this hospital, and in the past they have been treated in the out-patient department as at other hospitals. Last autumn, however, the committee of management took the first step towards improving the conditions in providing an ambulance to convey the children to their homes instead of allowing them to travel in public vehicles shortly after operation. As a further step, on May 1st a special ward of ten beds will be opened, reserved entirely for the admission of throat cases; the children will be admitted the day before operation, and will stay in hospital three days and three nights, or longer if necessary.

EXPECTANT TREATMENT OF MEASLES AND INFLUENZA.

DR. THOS. CARRUTHERS (Kilbarchan, Renfrewshire) writes: An epidemic of measles has reminded me of a formula I used in former epidemics: "Drinks of water till they ask for something to eat, and don't let them—up?—out till the cough's away." I am also reminded of my formula in the recent influenza epidemics: "Keep your bed till the cough's away and the appetite's back." It is many years ago now since I learned I had earned the title of "the cold water doctor," on account of my treatment of the early stage of any fever, apparently to distinguish me from the "milk and soda" and "plenty of sloppy food" doctors all round about! When will we learn to break away from the tradition of the textbooks and the fever hospitals, just as we are only now breaking away from the tradition of the maternity hospitals of the two-hourly feeding of infants?—a thing I broke away from ten or more years ago upon discovering that the feeds were naturally from five to seven in the twenty-four hours with different babies. There is far too much theory and worship of authority in the practice of medicine and too little observation of fact for oneself.

AESCULAPIUS AND CONSUMPTION.

DR. R. J. S. MCDOWALL (Leeds) writes: One cannot help thinking that the interpretation put by Mr. Morley Roberts on the advice of Aesculapius to consumptives requires further consideration. The date season in Egypt only lasts a few weeks, and the region in which dates grow in greatest profusion is most unsuited for consumptives—namely, the delta where the air is hot, extremely humid, and relaxing in summer, cold and raw in winter. The suitability of the Cairo district for consumptives is open to grave doubt. Assouan, in Upper Egypt, on the other hand, is well suited during the winter months, but, as it is some three hundred miles further south few patients are sent there, and fresh dates are certainly not available at that season. Those who have sojourned in the country will appreciate these points. Does not the value of the date lie in its having a high vitamin content and a large amount of sugar in a form easily assimilated?

BARLEY WATER.

MR. J. P. O'HEA, F.R.C.S.Eng., M.B.Lond. (Chichester), writes: Barley water is commonly advised as a diluent of cow's milk for infant feeding, and pearl barley is used also in the preparation of food for invalids. Barley as such is a very digestible and nutritious cereal; but I believe that pearl barley is only too often manufactured by the bleaching action of sulphur, and this is a process not calculated to render it more digestible—rather the reverse. The point is of considerable importance considering the feeble digestive powers of the infant, and also the fact that barley water is commonly prescribed when the digestive powers are enfeebled in such conditions as dyspepsia and "summer diarrhoea."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 28, 29, 32, 33, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30, 31, and 32.

THE appointments of certifying factory surgeons at Cerrig-y-Druidion (Denbigh), Cobham (Surrey), Gnosall (Stafford), and Knutsford (Chester), are vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page) ...	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.